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Automotive Industries

WYMAN= GORDON GUARANTEED FORGINGS

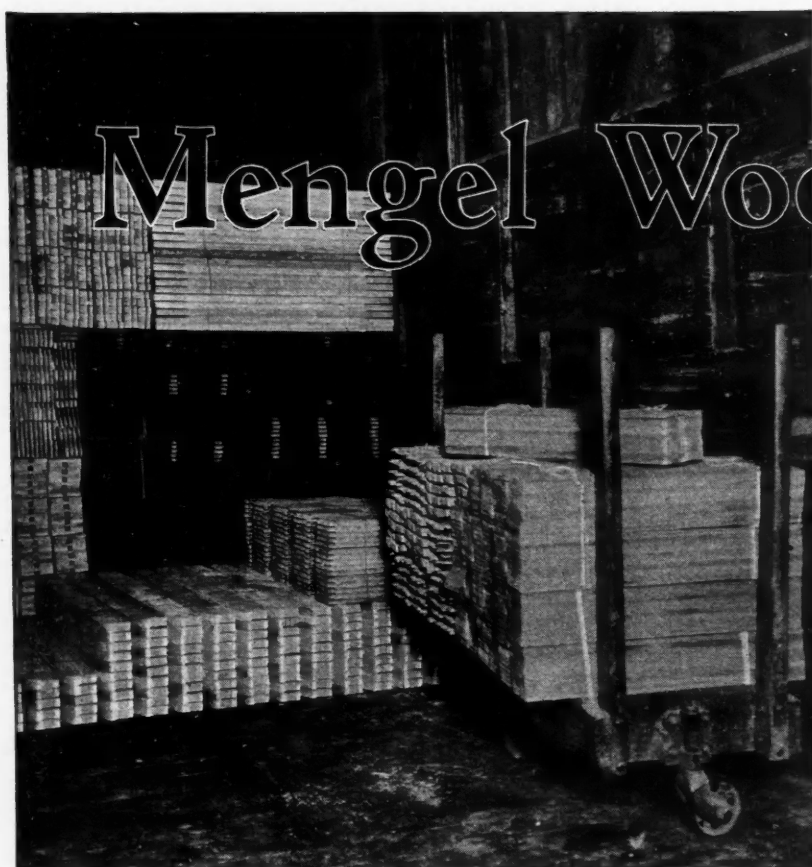
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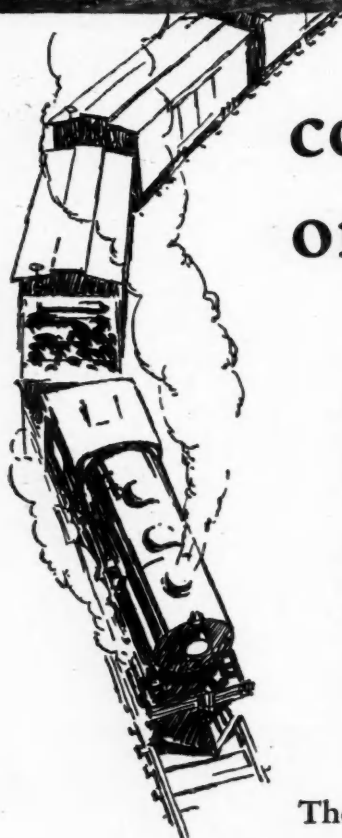
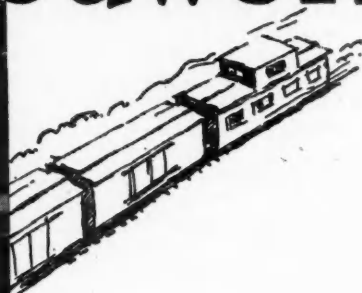


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Optimism Evident in British Industry

Difficulties ahead are recognized but officials see hope in dominion trends to English cars + + +

By M. W. Bourdon



AN official review of prospects of the British motor industry, as evidenced by trade returns in regard to imports and exports, by returns as to new car registrations and by reports from representatives in various parts of the world, carries throughout a vein of optimism, though the difficulties ahead are not unrecognized.

The review says that "the British motor industry has not as yet suffered from the prevailing trade slump to the extent so unfortunately apparent in other cases. It points out that, while the imports of auto-

mobiles from January-July this year were only 8118 units, valued at £1,315,340, as compared with 27,579 units, valued at £3,302,767 during the same months last year, exports showed the relatively small decrease from 24,819, with a value of £4,930,908 last year, to 18,915, with a value of £4,330,609 this year. The reduction in number of imported vehicles is far greater than the reduced number of new car registrations for the first six months of the year, implying an increase this year in British production.

"Both at home and in the wider markets overseas British motor ve-

British Foreign Trade in Motors

Motor Vehicles Only

Jan.-July	Imports	Exports	Excess of Exports
1929	3,302,767	4,930,908	1,628,141
1930	1,315,340	4,330,609	3,015,269
	<hr/> £1,987,427*	<hr/> £ 600,299*	<hr/> £1,387,128†

All Automobile Products

	Imports	Exports	Excess of Exports
1929	£6,274,910	£8,527,959	£2,253,049
1930	3,946,072	8,696,005	4,749,933
	<hr/> 2,328,838*	<hr/> 168,046†	<hr/> 2,496,884†

* Decrease. † Increase.

hicles are finding an increasing proportion of the market" the review then proceeds, "and it is gratifying to note that the progress made in recent years is being maintained, and extended despite the period of financial difficulty which is apparent in Australia and other markets, and the general world-wide period of economic stringency."

In spite of financial difficulty the British motor vehicle would appear to be making steady progress in Australia, when in Victoria alone British car sales, from January to May, were almost equal to the 1929 total, although the car sales for the state generally had fallen 48 per cent, as compared with the sales in the first quarter of 1929.

The development of the British motor industry in New Zealand has for some time engaged the closest attention of British manufacturers' section of the Society of Motor Manufacturers and Traders, and in view of the great interest shown in British motor vehicles as a result of the recently organized tour of 40 towns by a procession of such vehicles, Mr. Strong, the Section's secretary in Australia, recently visited New Zealand and explored the position fully, with the result that the Executive Committee of the Section has agreed to the appointment of a full-time representative of the section.

"According to reports received a noticeable feature of British motor imports into New Zealand during the last two or three years is that they appear less affected by booms and depressions than those of other countries. The British percentage of total imports of cars is steadily if slowly increasing. As a part of general propaganda the British motor industry film appears to be playing a useful part, and has already been shown at a number of centers in New Zealand," the official review says.

While neither in the home nor the export trade has the British motor industry yet suffered seriously in the prevailing world-wide trade depression, the

future is full of infinite difficulties. The motor industry, more than any other, is dependent for its continued progress upon general improvement in the standard of living and the stabilization of prices upon an economic level. From this point of view manufacturers cannot afford to be blind to

the important consequences that may follow the forthcoming Imperial Conference in London, and arrangements have been made for discussions to take place between representatives of the motor industry and the Dominion and Colonial Government authorities. The Executive Committee has emphasized at all times the essential importance of the development of closer trade relationships between the home country and every section of the Empire, and the members feel that it is in that direction, more than in any other, that the difficulties which confront not only this country, but every part of the British Commonwealth of Nations, can best be overcome.

It is satisfactory in this connection to note that both Australia and New Zealand, in recent months, have increased the measure of the British Preferential Tariff. There are signs that, with a recognition by the home country of our responsibility to other parts of the Empire, reciprocal tariff advantages will be provided for the British motor vehicle in particular in other Empire markets.

This even applies to the Union of South Africa and to other African colonies, who see that their best market under conditions of the future must be in Great Britain, and that from this point of view it is in their own interests to purchase, as far as may be possible, their requirements for motor transport from their chief customer. The adoption by the home country of tariffs designed to afford reciprocal advantages here for the primary products of other parts of the Empire appears to be long overdue.

There is no doubt that during the past two
(Turn to page 402)

October 18 Issue

**A complete Machine Tool Show
Surveys on Crankshaft manufacturing
practice, Chrome Plating, Materials
Handling and a Cemented Tungsten
Carbide study**

**Special articles by leaders in the in-
dustry — C. W. Nash on automobile
production and Ernest DuBrul on the
important machine tool business**

**These are some of the outstanding
features in the**

Production Issue, October 18

Four National Engineering Societies Present Metal Congress and Show

Extent of automotive interest displayed in the numerous papers scheduled by all organizations covering some phase of the industry's needs

Total of 35 papers to be presented + + +

By Edmund B. Neil

Director of Research
Chilton Class Journal Co.

THE broadness and scope of the 1930 National Metal Congress and Exposition, which will convene in Chicago the week of Sept. 22, can be best indicated by the fact that four national technical societies, the American Society for Steel Treating, the American Welding Society, the American Institute of Mining and Metallurgical Engineers and the American Society of Mechanical Engineers each will have technical sessions with the National Metal Exposition running concurrently, the latter at the Hotel Stevens. The sessions of all the engineering groups will be held there also, with the exception of those of the American Welding Society, to be at the Congress Hotel nearby.

Each society will have from seven to eight sessions, or a total of 35 in all, many with several papers for presentation at each session making as elaborate and comprehensive a convention and technical conclave as has been given for some time.

While many of the papers to be presented will discuss details of a nature somewhat outside the automotive field, it is particularly noteworthy that those which do deal with subjects of an automotive nature or are closely allied with this field are in abundance. In the group under the leadership of the A.S.S.T. it may be noted that interest in further discussion of the nitriding process is evidenced by two papers on various phases of this topic. Tungsten carbide also comes in for its shares of attention. Papers dealing with cracks, stresses, scaling and other effects of heat treatment or forging, those presenting details concerning alloys to resist corrosion, and many others undoubtedly have a close relationship to the problems of the engineer or metallurgist engaged in automotive work.

From the standpoint of any designer accustomed to adapt the welding process to the construction or manufacture of his product, papers at the session of

the American Welding Society will be of interest. In this session several papers will deal with various tests of welds of different types. Two papers on the welding of corrosion-resisting steels, one on welding costs, another titled "The Strength of Welded Joints in Tubular Members for Aircraft," by H. L. Whittemore, of the United States Bureau of Standards, and still another on "Fatigue Investigations of Welded Joints," by G. E. Thornton, have particular automotive promise.

The sessions of the Iron and Steel and the Machine Shop Practice Divisions of the A.S.M.E. may be of particular interest to those engaged in manufacturing operations as distinguished from other groups paying more attention to the theoretical phases of metallurgical engineering. The same applies to a few of the papers on the program of the Institute of Mining and Metallurgical Engineers even though the latter society is often interested in problems outside the automotive industry. It is in this group that the previously mentioned papers on nitriding operations are included. The extent of subject matter may be specifically indicated by three additional papers, one on "Phenol Resinoid Molding Technique (Consideration of Engineering Factors Involved in the Replacement of Metals by Synthetic Plastics)," by Leon V. Quigley, a discussion of "Automatic Polishing," by Robert T. Kent, and a paper on what promises material dealing with a new subject, "Repair of Worn Parts by Electro-Deposition of Iron," by T. P. Thomas.

Other papers present details relating to standardization, motor mounting and similar material of interest to the production executive. The Institute will have a session on aluminum alloys which will not only cover discussion of chemical and physical factors involved in their various compositions, but also will include material relating to the age hardening of duralumin and to alloys susceptible to heat treatment.

The Metal Exposition at the Stevens Hotel promises to be one of the most important events of the season.

Independent Springing Marks Progress

UP to quite recently decrease of unsprung weight was the only feature which made independent springing look attractive to engineers. It permitted of more comfortable riding qualities, which all manufacturers have been striving for in recent years. At the present time independent springing of the front wheels offers an additional advantage in that it practically eliminates all tendency to shimmy and wheel wobble, which have given considerable trouble since the introduction of four-wheel brakes and balloon tires. Wheel wobble consists of vibration of the front axle assembly around a central horizontal axis in the fore-and-aft direction.

In the conventional car the front axle with its wheels forms a rigid unit which is indeformable in the vertical plane. Such a unit can vibrate readily in this plane, since it is flexibly supported or held between the low-pressure tires and the chassis springs. Where independent springing is used for the front wheels there is no such unit, and wobble is therefore impossible.

"Independent springing seems peculiarly adaptable to front-drives, for the reason that the conventional axle center interferes with the final drive housing," Mr. Heldt finds + +

With the Cord established in the market and other companies developing front-drive cars, the connotation of this type of drive with independent springing is particularly significant at this time + +

System eliminates

Front-wheel wobble and shimmy induced by balloon tires and four-wheel brakes

Instability at high speeds + +

And reduces

Unsprung weight to a minimum

The design of passenger cars with respect to riding comfort has reached a high degree of perfection, but still more can be accomplished, and the use of independent springing is the most obvious method of accomplishing it. Instability at high speeds is one of the weaknesses of modern cars, and since independent springing bids fair to eliminate it completely, and to enable cars to hold the road better, this principle should be well worth a trial.

Thus, there appears to be considerable interest at present in independent springing for passenger cars. This is not a new feature by any means, as its first use of which the writer has any knowledge dates back exactly a quarter of a century; but its application in such a manner that it shall not offend the eye and convey a sense of strength and security involves considerable difficulties, and most of the applications of the past have been lacking in one respect or another. In fact, appearance has recommended independent springing far less than its effect on riding qualities.

What was probably the first application of the principle was on a Sizaire-Naudin car, which made its appearance in France in 1905. A drawing of the front suspension of this vehicle is reproduced herewith. The steering knuckles are provided with comparatively long vertical extensions having bearings in vertical hubs formed on the ends of the frame front cross-member, and the ends of the semi-elliptic cross spring bear down on the tops of these knuckle extensions, the ends of the spring evidently being slotted to allow for its lengthening with increasing deflection. The design looks rather crude, in that the sliding surfaces seem to be exposed to the action of moisture, dust and dirt, and in that the steering knuckles overhang their bearings by a considerable distance; it is likely, however, that bellows-type leather boots were used to protect the lubricated surfaces on the steering knuckle extensions, and the overhang of the knuckle naturally was less with the full load on the spring. At any

Toward Perfection in Riding Comfort

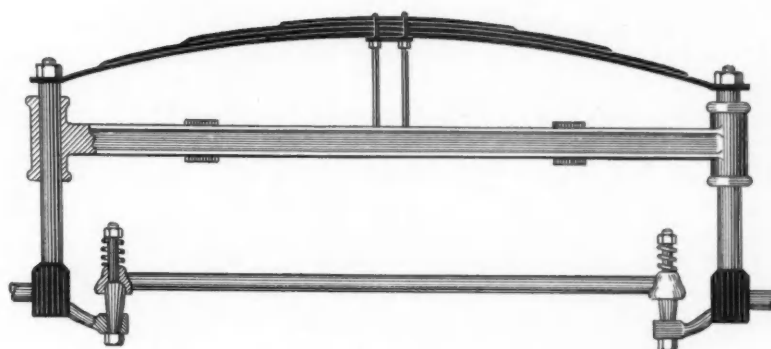
By P. M. Heldt

rate, the little single-cylinder car employing this suspension proved a striking success, winning many races during the next few years and extending its market far beyond the borders of France.

We may consider briefly just what is meant by the term "independent springing." In the conventional car the two-wheel spindles on opposite sides at either front or rear are connected by an axle which is rigid in the vertical plane, so that any vertical movement of one wheel, as when passing over an obstruction, is accompanied by a displacement of the other wheel. In fact, the whole assembly pivots around the point of ground contact of the other wheel. With independent springing this interdependence of the wheels is eliminated. This does not mean that when one wheel passes over an obstruction the other is not affected at all; if the obstruction is sufficiently high, the entire car may be tilted, including the wheel on the opposite side, but the effect is transmitted to it through the chassis springs and the chassis frame, and there is not that absolute relationship between the height of the obstacle passed by one wheel and the angle of tilt of the other wheel that there is in a conventional vehicle.

It is rather difficult to find a concise definition that shall fully cover all of the different forms of independent springing, but the following will give a good idea of what is meant by the term: Independent springing is such an arrangement of the assembly, comprising the wheel spindles on opposite sides of the car at either front or rear, the structure on which they are supported, and the suspension, that the assembly can deform in the vertical plane under the influence of road shocks.

This definition, of course, gives no idea of the particular advantages which the system offers and which have led present-day designers to investigate its possibilities with interest and hopefulness. It is more than likely that the object of the designers of the Sizaire-Naudin car, who were the first to make use of the principle, was to reduce the number of parts and thus to decrease the cost of production. It was claimed for this car that it had only 420 parts, which



Independent front springing
of Sizaire-Naudin 1905 car

was less than the number entering into any contemporary model. What looks like the axle center in the drawing is really the front cross-member of the frame, which is extended and provided with vertical hubs in which the extensions of the steering knuckles slide. However, it was realized even at that early period that the construction decreased the unsprung weight, and was desirable for that reason.

In the foregoing, independent springing of front wheels has been referred to almost exclusively, but the principle is equally applicable to the rear wheels. So far as improvement of passenger

Independent springing comes to the front as the next step in the progress of the industry toward riding comfort

In this article Mr. Heldt begins a series of four on suspension, to include descriptions of the four different types and their applications. These articles will appear in succeeding issues of Automotive Industries + + + + +

comfort is concerned its application to the rear wheels is even more productive of results than independent springing of the front wheels, for the reason that the passengers are seated much closer to the former.

While the independent springing principle has been known for more than 25 years, American engineers have paid scant attention to it in the past. Its claims to consideration have been urged particularly recently when the shimmy problem was under discussion, but one thing that has been against it is the apparent lack of strength and safety of a good many designs incorporating it, as compared with the conventional construction. There can be no doubt, however, that an independent springing system for front wheels can be given all of the strength that is needed. Of course, there is very little accumulated experience to guide the engineer who starts out to design such a system, which, therefore, involves more of the elements of the experimental than does a conventional front axle.

Opprobrium from Early Trials

Another thing that may have retarded the application of this principle in production cars is the fact that shortly after the war two companies were organized in this country to manufacture light cars embodying it. The methods employed in connection with the promotion of these companies were generally regarded as not in conformity with the best business standards, and it is barely possible that some of the opprobrium of these promotion schemes attached itself to the principle of independent springing, in the minds of those who witnessed the failures or were financially injured thereby.

A considerable number of cars with independent springing, either at the front only or at both front and rear, have been placed on the market in Europe during the past five or six years. At the Paris Automobile Show held last fall, 12 models out of 110 shown had this form of springing. Probably another dozen makers in various European countries who were not exhibiting also employ this feature, which is today conventional practice in Austria and Czechoslovakia. Unfortunately, a considerable proportion of those who have launched cars with this type of springing are builders rather than manufacturers, and the design problems are rather crudely worked out in many cases. The one car with independent springing that has been in regular production for nearly a decade is the Lancia Lambda. This was brought out in 1922 and has been continued ever since without radical changes. It is claimed to hold the road at high speeds far better than conventional cars, owing to the small unsprung weight. An attempt to manufacture the car in this country was made some years ago, but owing to its small four-cylinder engine and high price it hardly fitted American market conditions, hence the plan had to be abandoned.

Independent springing is not limited to the passenger car field but probably has fully as much of a future in the bus field. It was one of the features of a bus designed by Roland Chilton for the Aero-marine Plane & Engine Co. of Keyport, N. J., some

six or seven years ago, which, however, never went into production. Since that time it has been applied in a considerable number of German buses, some of them with front drive.

Independent springing seems to go together particularly well with front drive, for the reason that the conventional axle center interferes with the final drive housing in a front drive, and, if an axle center is used it must be curved to swing around the final drive gear housing in front or below, neither of which arrangement is entirely satisfactory.

Four Types of Design

There are essentially four different types of independent springing, each of which can be applied to either front or rear wheels. These may be briefly described as follows:

First, steering knuckles sliding in or on vertical guides on brackets secured to the chassis frame (or to the body if no chassis frame is used).

Second, steering heads (on which the knuckles are swiveled or the wheel spindles supported) carried on the ends of transverse leaf springs which are anchored at the middle of the frame on either a cross-member or the final-drive housing.

Third, axle housings made in halves, each half being pivotally supported at its inner end so it can swing in a vertical plane, the load being transferred to its outer end by means of a leaf spring anchored to the frame.

Fourth, axle spindles or steering heads mounted on lever arms extending parallel with the frame side members and having bearings on the frame.

These different types will be discussed in detail in articles to follow.

Optimism Evident in British Industry

(Continued from page 398)

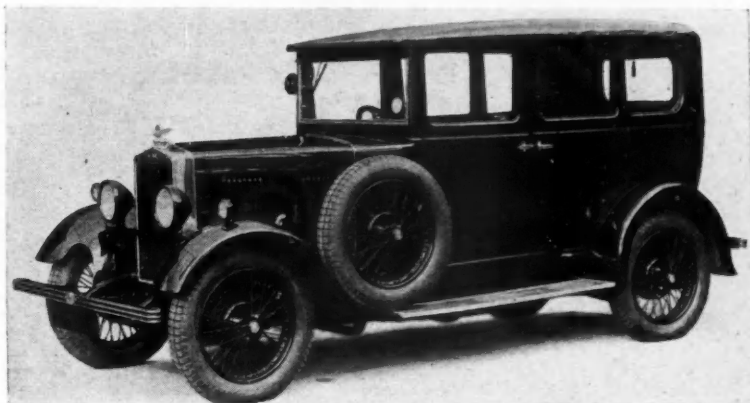
years the economical aspect of the British light car in particular, even in countries with the roughest road conditions, has been recognized and the demand for these types of cars is growing rapidly, and is likely still further to increase in the next few years with the realization that this type of transport affords the greatest economy.

Although, in many markets, stocks of cars in the hands of agents are excessive and forced liquidations are prevalent, it is interesting to note that, with few exceptions, stocks of British cars abroad are of reasonable dimensions and some British dealers are proving the exception to the general trend of trade losses. Although some three or four years ago, it was difficult to find suitable dealers to represent British lines, today many large dealers in all parts of the world, formerly representing foreign lines, are pressing for British agencies.

It is thus possible, even with all the difficulties of the present and of the future, to be optimistic upon the conditions of the British motor export trade and there are many signs that British manufacturers will obtain a far larger share of the world market, particularly in the various parts of the British Empire.

Morris Combines Two Models in Producing "Major" Six

Side-valve engine of the Oxford and chassis of the Cowley four are merged to meet demand for light car



The Morris Major Six saloon has the Oxford Six engine and the Cowley four-wheel base

TO cope with the demand in Great Britain for a lower priced and smaller six-cylinder car than the 15 hp. (122 cu. in.) Morris-Oxford which was introduced 12 months ago, Morris Motors, Ltd., has produced a new type known as the Morris Major—the Morris Minor being the 8 hp. (52 cu. in.) model introduced two years ago to compete with the Austin Seven.

The new "Major" is a combination of two existing models, both continued for 1931, viz., the Oxford Six and the Cowley Four, the latter Sir William Morris' first post-war production. The "Major," then, has the same six-cylinder side-valve engine as the Oxford Six, but otherwise it is almost a replica of the Cowley Four; even the wheelbase and track of the four and the six are identical, viz., 105 in. and 48 in. respectively. Thus the same bodies can be used on both chassis, though with the six-cylinder engine the maximum leg room afforded by adjustable front seats is 2 in. less than with the four-cylinder.

The new Major Six is offered with three styles of bodywork; the first is a metal four-door sedan with folding roof corresponding with the metal sedan of the Cowley Four, and the second a two-door close-coupled fabric sedan, produced exclusively for the Major and to be known as the "salonette." The latter is a four-passenger body with tip-up front seats, and an integral luggage locker extending at the rear; it has four sliding windows and a fixed roof; the doors are 34½ in. wide, and the body sides are continued down to the step boards, valances thus being eliminated. The third body type is the coupe with folding roof used also for the Cowley.

Prices of the new Major cars make them the lowest

Morris Prices Compared

	Metal Sedan Folding Roof	Metal Sedan Fixed Roof	Fabric Sedan Fixed Roof	Coupe Folding Roof
Major Six	£225	None	£215	£220
Cowley Four	£190	£185	None	£180
Oxford Six	£285*	£275	£265	£285*

*Sliding instead of folding roof. On the Cowley Four and Oxford Six phaetons are offered at £170 and £250 respectively

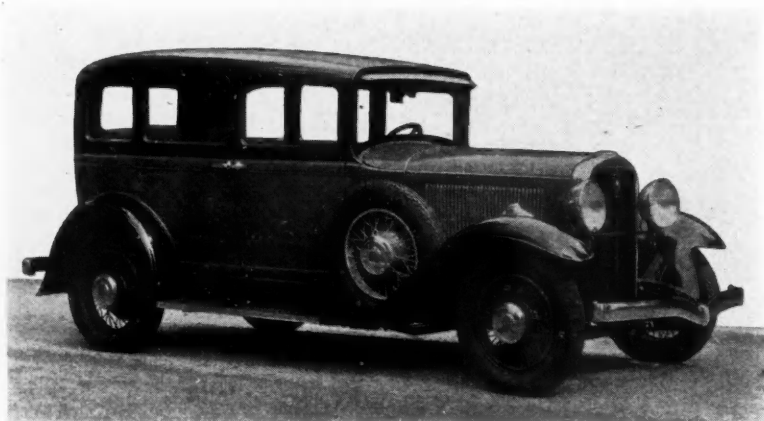
priced British Sixes yet on the market by about £30. They are as tabulated, with the prices of the Cowley Four and the Oxford Six given where applicable for comparison.

The price differences between the Major and the Cowley are, in effect, less than the table indicates, because those of the Major include wire wheels, which are £3. 10s. extra on the Cowley, and thermostatically operated radiator shutters, which are not available on the Cowley.

All prices include Triplex safety glass, bumpers, speedometer and clock, radiator thermometer, rear-view mirror, spring shoes, dipping headlights, fuel gage and grouped nipples for chassis lubrication.

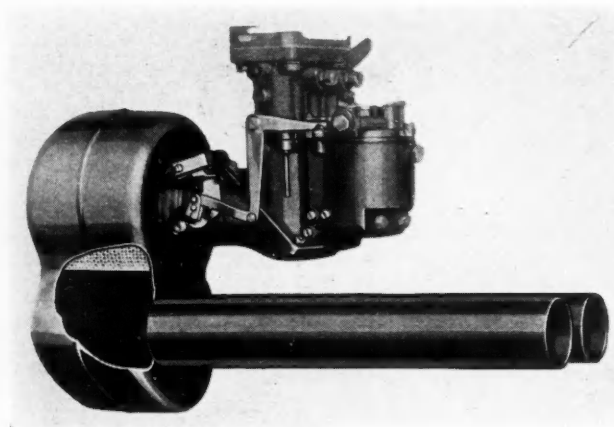
The Major bodies are supplied only with black fabric and red upholstery or in black or lake cellulose with green or red upholstery.

Free-Wheeling Offered in Dictator



Studebaker announces lower priced series with major improvements, including dual manifolding and carburetion

By Athel F. Denham



The Dictator Eight Regal sedan, listing at \$1,250, has six wire wheels and folding luggage grid. The new Studebaker series features free-wheeling + + +

Supplementing the free-wheeling in the Dictator series is the carburetor silencer, attached to the Duplex carburetor for elimination of "power roar" + + +

Studebaker Dictator Prices

Body Model	New Price	Old Price	Reduction	Weight
2-pass. coupe	\$1,095	\$1,255	\$160
4-pass. coupe	1,150	1,315	165
5-pass. sedan	1,150	1,295	145	3,079
5-pass. Regal sedan	1,250	1,415	165

Note that the Regal sedan is equipped with six wire wheels, fender wells and trunk rack.

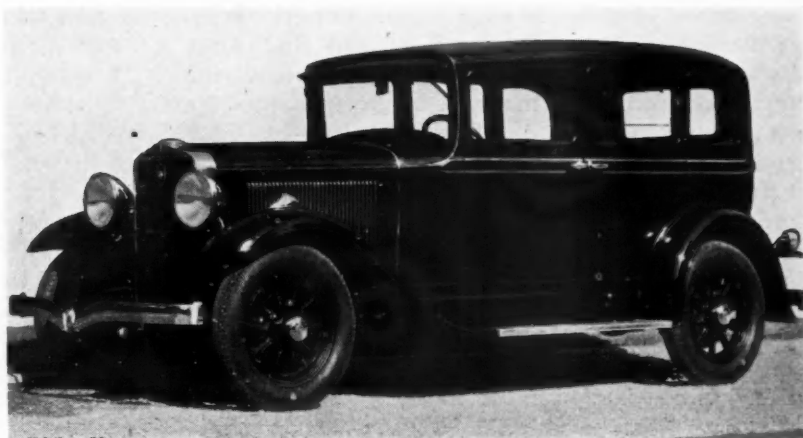
FREE-WHEELING, which was introduced to the American public by the Studebaker Corp. two months ago, has now been made available also in the \$1,000 price class, through the announcement by Studebaker of a new Dictator Eight which incorporates it. In spite of the addition of this feature, as well as of dual manifolding and carburetion, and intake silencing, prices on the new Dictator are from \$65 to \$165 lower than on the previous series. The Dictator is offered in four models.

The result of the adoption of the new manifolding and carburetor has been an increase in horsepower from 72 to 82, reflected in marked improvement in performance. Torque has also been raised approximately 3 per cent, and the torque curve of the engine with the new intake system is almost perfectly flat between 950 and 2000 r.p.m., a feature having a very favorable effect on the acceleration performance.

In the chassis, a number of important changes have been made, including the adoption of Tryon shackles, cable controls for the Duo-Servo brakes and Bowden wire for the starter and spark controls. The main object of these changes, taken as a whole, has been to make the chassis more rattle-proof; shackles, controls and brake mechanisms customarily giving the greatest trouble in this respect.

The greatest change in appearance has been made in the front end. The radiator outline has the same characteristics as those on the Commander and President eights, recently announced. Vertical

Series



vane-type grills are assembled in front of the radiator core. This grill has a somewhat larger frontal area than does the radiator core, and with the provision of air scoops between the grill and the core, considerably higher air flow and therefore increased cooling efficiency is obtained than would be possible with a normal radiator front design. Cooling water circulation is thermostatically controlled.

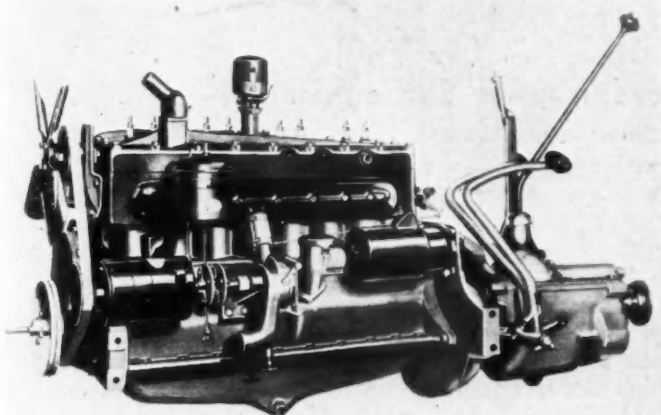
Metal roof side panels have replaced the former fabric covering, making for neater appearance. The ovaloid headlamps which characterize the Studebaker Commander and President are also found on the Dictator in modified form. Bumpers are of the wide single-bar type, chrome-plated, the front bumper having a V-shaped downward dip in the center in order to show the new attractive radiator to best advantage.

There is not much change in the general appearance of the bodies. The instrument panel is new, while the adjustable seats are retained. The starter control has been removed from the toe-board and is now located in the form of a button on the dash.

Going back to the powerplant, a few additional changes are to be noted. The acoustic intake muffler has already been mentioned. It is similar to the Burgess unit used on the two larger eights, consisting of two pipes tuned to the lengths of the air waves producing what is known as "power-roar" in the intake manifold. This muffler is horizontally mounted below the carburetor and connects to an air chamber around the air cleaner, the latter being attached to the carburetor intake. No changes in valve timing have been made in the Dictator eight in connection with these changes.

Main and camshaft bearings in the new Dictator eight are of the steel-backed, babbitt-lined type. Compression rings are cam-turned, and the oil ring is of the recently introduced new type produced by Perfect Circle, with a single oil slot in the base of a rather deep and wide groove.

The compression ratio has purposely been kept at



Dual carburetion, dual manifolding and free-wheeling are features of the Studebaker Dictator eight. The five-passenger sedan lists at \$1,150 + + + +

The Studebaker Dictator engine develops 81 hp. It has the carburetor silencer, developed by the company, a nine-bearing crankshaft and Lanchester vibration damper + + + + +

a conservative value in order to assure maximum smoothness. In spite of this the output is 0.37 hp. per cu. in., which is well above the average. Together with the relatively low weight of the car, only slightly more than 3000 lb. for the sedan, this high power output is responsible for the excellent performance of the new Dictator. The top speed of the new cars is in the neighborhood of 75 m.p.h., according to Studebaker engineers.

The outstanding feature of the new Dictator probably is the free-wheel transmission, however. Since this unit has already been described in these columns in connection with the announcement of the President and Commander eight, no description of it is called for here. It will be remembered that the advantages claimed for the device are: lower fuel consumption, decreased wear and tear on the engine and clutch,

possibility of shifting between second and high without declutching, in either direction, and elimination of much of the usual torsional vibration occurring during deceleration on the open road. In design the Dictator unit is identical with that used on the Commander eight, comprising helical constant mesh gears for the countershaft drive and second speed.

Among the engine accessories are to be noted a larger generator and an improved fan. The former is provided with a thermostatic control to prevent too high a generator output. It is of Delco-Remy manufacture. Changes in blade shape and pitch have made possible a reduction in fan speed. This in turn has resulted in a reduction in fan noise.

The major change in the braking system is in the

adoption of cable controls to eliminate rattle and prevent binding due to insufficient lubrication. Service brakes themselves continue of the two-shoe Bendix, Duo-Servo type, with 12-in. drums 1½ in. wide.

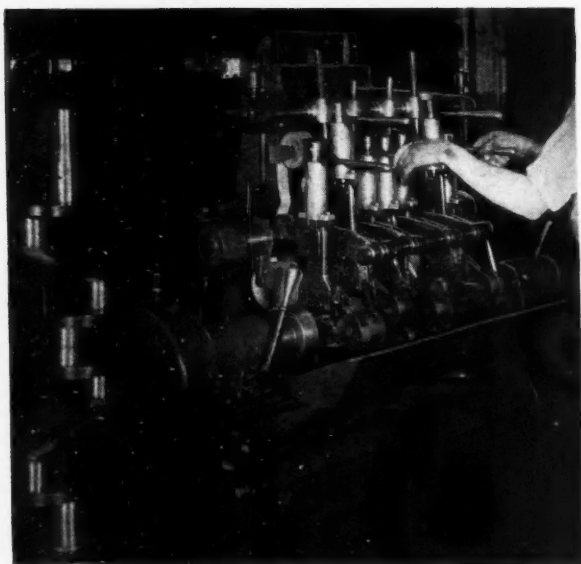
The adoption of Bowden-wire-type starter and spark controls is another innovation in the low-priced Studebaker Dictator series. While elimination of rattle is the principal reason for their adoption, they are also freer from the danger of binding, as in the case of the brake cables.

Such previous features as a nine-bearing crankshaft, with Lanchester damper, Bohnalite pistons with invar strut, oil cleaner, air cleaner, torsional damper in the clutch, double-drop frame, double-shackled left front spring, etc., are retained.

Ford Finishes Seven Main Bearings in One Operation

FORD crankshaft bearings are being polished to a finer degree as the result of the development of machines that finish the seven main and connecting rod bearings in a single operation. After the crankshaft has been ground and statically and dynamically balanced, it is placed in a specially built lapping machine with seven arms—one for each bearing. Each arm holds six fine lapping stones or hones which clamp around the bearings under heavy pressure. Then, the shaft is rotated and at the same time oscillated until no roughness from the grinding operations remain.

To produce an absolutely smooth and bright finish, the shaft is then placed in a similar machine which holds an extra fine polishing paper instead of the lapping stones. Again it is rotated and oscillated after which the bearings are cleaned and inspected.

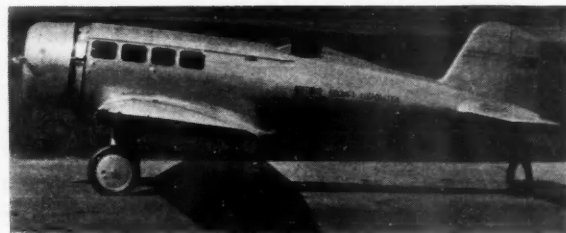


Finishing seven main and connecting rod bearings in a single operation at the Ford plant

The polishing paper used in the second machine is fed automatically so that there is a fresh supply for each crankshaft. This, with the oscillating motion, permits a more uniform finish than was possible under the old method of polishing each bearing separately on a revolving wheel.

Northrop Develops Low-Wing Monoplane

AN all-metal, low-wing monoplane has been produced by the Northrup Aircraft Corporation (Division of United Aircraft & Transport Corporation) of Burbank, Calif. The fuselage structure is of the skin-stressed type, of Alclad, and was designed for machine production. The cabin accommodates six passengers and also has a baggage compartment.



Northrop all-metal low-wing cabin monoplane

The pilot is located aft of the cabin in a cockpit which may be either open or closed. Following are the principal specifications of the craft:

Wing area total	295 sq. ft.
Weight empty	2300 lb.
Gross weight	4200 lb.
Powerplant "Wasp"	420 hp.
Gas, normal	116 gal.
High speed	175 m.p.h.
Cruising speed	145 m.p.h.
Service ceiling	19,000 ft.
Climb at sea level	1300 f.p.m.

British Institute Studies Reports of Non-Ferrous Metals and Aluminum

"Present status of aerial transport is due in a large measure to the development of suitable alloys in large quantities," D. Hanson, president, stated in opening annual meeting last week

William L. Fink and Kent R. Van Horn, of Cleveland, were only Americans to present papers +

PAPERS on aluminum alloys and non-ferrous metals preponderated at the annual meeting of the Institute of Metals held in Southampton, England, Sept. 9 to 12. Only one American paper was presented, William L. Fink and Kent R. Van Horn, of Cleveland, being coauthors of a report on "Lattice Distortion as a Factor in the Hardening of Metals."

The uses of non-ferrous metals in the aeronautical industry were of major interest at the meeting, as D. Hanson, president of the Institute, and Professor of Metallurgy, University of Birmingham, delivered an address on the subject on the opening day.

While it is perhaps true that the first airships and aeroplanes owed little to the use of non-ferrous metals, the present state of aerial transport is in large measure due to the development of suitable alloys and their use in aircraft construction in large quantities," Dr. Hanson stated. "Metals first entered into aircraft in appreciable quantities in the construction of the engines, and the modern high-powered units of low weight owe much to the extensive employment of non-ferrous alloys.

"More recently, improvements both in design and in materials have made possible the development of strong, reliable all-metal structures, suitable both for aeroplanes and airships. The alloys used must be strong for their weight; this requirement is fulfilled by some of the alloy steels, and by the high grade aluminum and magnesium alloys, but the steels are at some disadvantage owing to their greater density, which prevents their use in many directions owing to the thin sections that would be required to take advantage of their greater strength. The non-ferrous alloys also possess the advantages that they can readily be used as die-castings, forgings, stampings, and so on, and lend themselves more readily to the methods of standardized production that are already being adopted, and will become essential as popular flying extends.

"Perhaps the most notable feature in regard to aluminum alloys is the extent to which heat-treatment is employed in developing their useful properties. All the important wrought alloys are used in a heat-treated condition, and there is a growing tendency to use castings similarly manufactured, and important developments have recently been made in both types of alloy.

"The use of magnesium alloys is of more recent origin, but is rapidly extending. Improvements in melting and casting methods, as well as the discovery of new alloys, have contributed to this extension and there are already indications that the application of the processes of heat-treatment in suitable instances, as is done for aluminum alloys, will lead to further improvements. There is every indication that magnesium alloys will enter largely into aircraft construction in the future.

"The development of rustless iron and nickel alloys will also be watched with interest, as they may well find application on account of their resistance to corrosion, although there are many directions in which the alloys of low density are not likely to be displaced."

In their paper on the hardening of metals, Messrs. Fink and Van Horn reported that "Rockwell hardness

measurements and diffraction patterns show that lattice distortion can be accompanied by appreciable softening in an externally stressed aluminum alloy ('17S') or a brass. The curve representing stress versus hardness relations in the elastic range is given.

"It was found in certain '17S' alloy specimens that lattice distortion resulting from quenching stresses approximating the elastic limit did not alter the hardness.

"References are cited to show that maximum lattice distortion and maximum hardness are not necessarily coincident in age-hardened alloys.

"Results indicate that considerable caution should be exercised in attributing the hardening of metals to lattice distortion."

While the majority of contributors to the Institute program were English, a paper by two Russians, N. W. Ageew and Olga I. Vher, and a German, K. L. Meissner, of Duren, added international color to the program. The coauthors from Leningrad presented their findings on "The Diffusion of Aluminum Into Iron," and Mr. Meissner read a report on "The Artificial Ageing of Duralumin and Super-Duralumin."

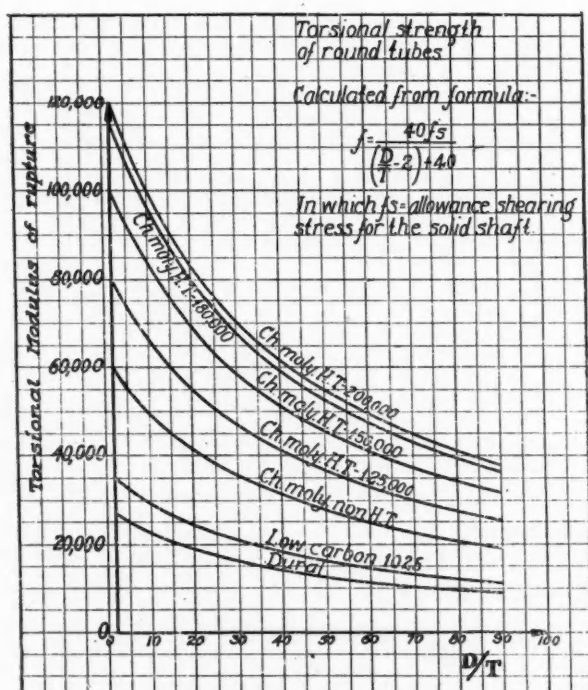
Twelve other papers were presented and discussed during the three-day sessions.

Allowable Stresses in Tubes Under Torsion

IN the design of aircraft there has been felt a need for a reliable method of determining the allowable stress in tubes subjected to torsion, as a function of the diameter/thickness ratio. The following empirical formula has been derived from the results of Army and Navy tests, and expresses the data utilized in convenient and usable form:

$$f = \frac{40 f_s}{\left(\frac{D}{T} - 2\right) + 40}$$

in which f is the allowable stress in the tube,
 f_s is the shear allowable of the material,



Nine curves covering materials commonly used in airplane structures plotted from the shear value allowed by the Air Corps + +

$\frac{D}{T}$ and $\frac{D}{T}$ is the ratio of the diameter of the tube to the thickness.

It will be observed that, when $\frac{D}{T} = 2$, the tube has become a solid bar and the stress will be the pure shear stress, and f becomes equal to f_s . It will also be observed that the formula is rational and no impossible or unreasonable values may be obtained from its use.

Superimposed on each graph of test data is the curve of this formula, based on what seems to be a reasonable shear value for solid stock of that particular material. These test data seem to substantiate the use of this formula for any material.¹ This being the case, the expression is very convenient for design purposes, since we can design to any degree of conservatism by simply inserting in the formula the shear value we wish to allow.

For use in design, there has been plotted in the accompanying chart on the basis of this formula, a family of nine curves covering the materials commonly used in airplane structures. These curves may be used directly for design, as they are plotted from the shear value allowed by the Air Corps for each material.

Townend Ring Rights Extended to British Firm

REFERENCE has been made repeatedly in these columns to the Townend Ring, a cowl of short cord encircling the heads of radial air-cooled engine cylinders in airplanes, which was invented by H. C. H. Townend, an assistant in the Aerodynamics Section of the National Physical Laboratory.

The British Government has reserved for itself the free use of the ring under the British and Dominion patents, and all other rights under these as well as under foreign patents have been transferred to the firm of Boulton & Paul, according to an item in *The Engineer* of London. The latter firm also has applications for patents on improvements over the original form of the cowl. The general licensees plan to license aircraft manufacturers both in Great Britain and other countries for the use of the ring.

Aeronautics Branch of Department
of Commerce Draws up Regulations

For Approved Ignition Shielding for Radio Installed in Commercial Planes

Requirements, including complete equipment necessary, are proposed to follow plan of "approved type certificates" issued for engines and aircraft + +

IN the same way that all aircraft and engines for aircraft destined for commercial services are subject to type approval by the Aeronautics Branch of the Department of Commerce, it is now proposed that radio sets for use on commercial airplanes shall be subject to type approval. Moreover, the method of installation of the radio set on the plane is to be also under the control of the Aeronautics Branch. The branch has worked out proposed regulations under which manufacturers who plan to produce radio sets for use on commercial airplanes in quantity may make application to the Secretary of Commerce for an approved-type certificate for such equipment. Such application may be followed by the issuance of an approved-type certificate if the department finds that the apparatus meets the minimum requirements satisfactorily.

The installation of radio equipment also must meet minimum requirements of the department and it is to be ordered that no licensed aircraft shall be flown with radio equipment until the installation has been inspected and approved by an inspector for the Department of Commerce.

The proposed minimum requirements for radio equipment on aircraft, minimum requirements for radio installation on aircraft, and minimum requirements for aircraft engine ignition shielding are printed in Air Commerce Bulletin, Vol. 2, No. 5 (September 2, 1930). Readers of *Automotive Industries* probably are interested most in the provisions governing ignition shielding, and we reprint the proposals herewith.

Section 1. General—In order to obtain full efficiency of operation of the present type sensitive aircraft receiving sets, it is necessary to eliminate the intense interference due to electrical disturbances from the airplane engine ignition system. This requires that the entire high voltage electrical system of the engine ignition be completely encased in a high conductivity metallic shield. The magnetos must be provided with such covers as will completely in-

close the distributing heads. The booster magneto must also be inclosed in metal. All distributing wires must be covered with a metal tube or braid, the spark plugs must be completely shielded, and the booster leads and leads to the ignition switch, together with the ignition switch itself, must be similarly treated.

The inclosure of the high-voltage electrical system of the ignition in a closely surrounding metallic casing introduces a number of problems of mechanical design, insulation, ventilation, etc. The following discussion outlines the minimum specifications considered necessary to insure safe operation on aircraft.

Sec. 2. Over-All Shielding Assembly—A. The conductivity of the metal casing inclosing the electrical ignition system must be as high as possible. The higher the conductivity the more effective will be the shielding. High conductivity is obtained: (a) By using materials that are good electrical conductors, such as copper and aluminum; (b) by making all joints of the casing good electrical connections; and (c) by providing frequent grounding of the casing to the engine, thereby placing the main metal mass of the engine in parallel with the metal casing.

B. The close proximity of the metallic casing to the ignition cable, spark-plug terminals, etc., requires the use of the highest grade insulating material. In particular, the insulation for the ignition cable must be as nearly corona proof as possible. A clearance of $\frac{3}{4}$ -in. air space must be maintained between any part of the metal shielding and any exposed metal conductor or terminal carrying the high-tension ignition current.

C. Since the provision of a metal casing around the component parts of the ignition system tends to increase capacity and corona effects, it is good practice to group the high-tension cables wherever possible inside one metal shield. This also lends itself to good mechanical design.

Sec. 3. Magnetos—A. The distributor, distributing

blocks, and breaker mechanism must be completely inclosed in a metallic case, which shall be so carefully designed as to be water-tight.

B. The magneto-shielding covers shall be compactly designed to permit use on the more common types of aircraft engines.

C. The shielding covers shall be easily removable, for inspections, without necessitating the disconnection of any lead or leads and without disturbing any other part of the assembly.

D. The outlet or outlets for the ignition distributing leads must be water-tight. Suitable water-tight shielding outlets must also be provided for the booster and switch leads.

E. Ventilation of the main-shielding cover must be provided, preferably at the bottom, to prevent condensation.

F. The terminal block of the booster magneto must be shielded with a suitable water-tight metal cover, provided with a single waterproof outlet for the booster and ground leads.

Sec. 4. Ignition Distributing Harness—A. All high-tension cables must be inclosed in a metallic cover of good shielding material.

B. The type of construction of the shielding cover must be such as to permit flexibility of application to different types of aircraft engines.

C. It is essential that the metallic cover be sufficiently sturdy to withstand the usual mechanical wear incidental to use and servicing on aircraft engines, thus insuring constant shielding efficiency over a long period of time.

D. The method of connecting the shield inclosing the high-tension leads to the magneto shielding covers and also to the spark-plug shielding covers must be such as to insure good electrical contacts and should be of mechanically sound design. Under no conditions should a soldered joint be made at a point while the high-tension cable is inside the shielding, since the heat necessary to make a good soldered joint is sufficient to damage the insulation on the cable, thus offering a certain point of breakdown.

E. Positive protection for the individual leads against mechanical abrasion should be insured. If the shielding cover is of a manifold type, care must be taken that the inner surfaces of this manifold are sufficiently smooth to prevent damage to the high-tension cable when being threaded through the manifold. All sharp edges must be chamfered and sharp bends avoided.

F. Protection for the individual leads against oil, gas, water, etc., is optional.

Sec. 5. Spark Plugs—The shielding of the spark plugs must satisfy the following requirements:

A. The type of shielding must not materially interfere with the cooling of the plug.

B. The type of shielding must provide for easy installation and servicing of the plug. The over-all length of the spark plug and shield must not exceed 3 in.

C. Complete provisions for protection of the plug from being short-circuited by rain must be made.

D. The type of shielding must be such as to provide against flash over due to condensation.

E. The spark plug shield must make good electrical connection with the engine block.

F. The dependability and length of service of the shielded spark plug must be comparable with that of standard unshielded spark plugs.

G. More severe requirements must be met for high-altitude flying.

Sec. 6. Low Tension Shielding—A. The ignition switch and switch leads must be completely shielded.

B. It is essential that the metallic shielding provided serve also for mechanical protection. This permits the direct routing of the switch leads to the shielded ignition switch.

C. When shielding braid is used for shielding the switch leads, care should be taken to preclude the possibility of the metal braid coming in contact with the exposed terminals of the switch. This trouble is particularly encountered in multi-engined airplanes where two or more ignition switches are grouped together. This difficulty is best overcome by terminating the braid and bonding it to the outside surface of the shielding cover for the ignition switch. The wires leading within the shielding cover are unshielded.

Sec. 7. Shielding of Auxiliary Electrical Apparatus on Aircraft—A certain amount of noise in the receiving set output may be attributed to commutator ripples of generators and sparking of voltage regulators, electric tachometers, and other electrical appliances. Wherever possible, this apparatus should be completely inclosed in metal. In the case of the generators, this method is not effective in eliminating disturbance carried by way of the leads from the generator. Adequate filtering of the generator output is in addition required.

Sec. 8. Operational Requirements—The over-all shielding assembly shall be considered satisfactory if, in addition to satisfying a thorough inspection for mechanical construction, it also meets the following tests:

A. *Test for shielding*—The best test for radio shielding is the actual use of the shielding assembly mounted on the airplane engine. The radio receiving set must be suitably installed on the airplane, with an antenna of at least 6 ft. extending vertically above the fuselage, and must be adjusted to maximum sensitivity. The receiver should have a sensitivity such as is required in Part I of this bulletin, section 3 B. If the shielding is complete, no ignition noise should be heard in the head phones. (connected in the output of the receiver) for all engine speeds and for all tuning adjustments of the receiver.

In this test it is understood that the engine is functioning normally in every way (that is, spark-plug gaps properly adjusted, etc.), that the noise level in the receiving set output due to atmospheric disturbances is normal, and that the airplane itself is suitably bonded and all auxiliary apparatus, such

(Continued on page 416)

Impulse Starter of French Design Developed for Heavy Duty Engines

"The Flog," a special form of magneto-coupling, has been tested and made available for commercial use by Janvier and Sabin + + + +

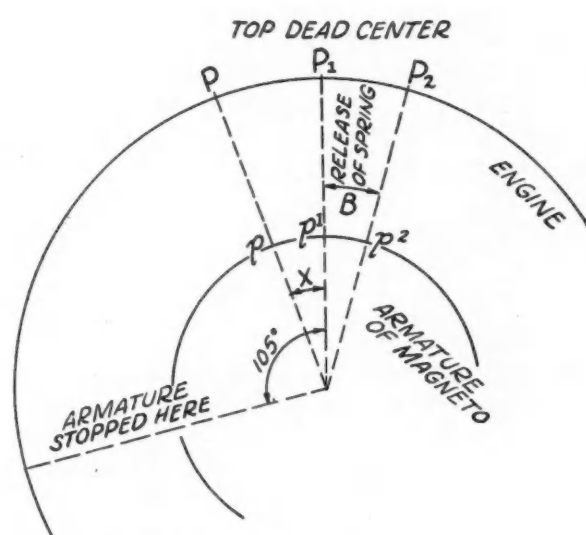


Fig. 1 — The Flog impulse starter magneto coupling applied to truck engine with fixed ignition + +

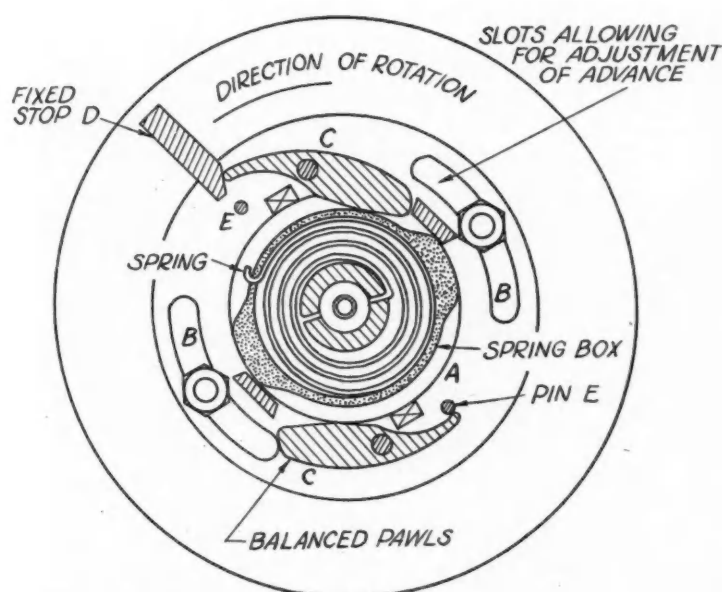


Fig. 2—Sectional diagram of the Flog impulse starter

A NEW impulse starter for magnetos for large engines has been developed to a commercial stage by the firm of Janvier & Sabin, Avenue Felix Faure, Chatillon sur Bagneux, France. The following description of it is taken from *The Commercial Motor*.

The Flog, as the starter is known, is a special form of magneto coupling whereby when the engine is cranked slowly, the magneto armature is stopped at a certain point of its revolution. When the armature is released again it turns rapidly under the action of a coiled spring, which overtakes the engine and gives a powerful spark just after top dead center.

In Fig. 1 the starter is shown applied to a standard White truck engine having fixed ignition with a constant advance of 5 mm. and a stroke of 5 3/8 in. The magneto, in this case, gives a spark at point P, which is situated 20 deg. from top dead center P₁. The engine position P corresponds with the position p for the armature of the magneto, and it is here that the contact points diverge.

As a result of one of two balanced pawls contacting with a fixed stop, the armature of the magneto is arrested at a point 105 deg. in advance of top dead center. On reaching this point, the pawl is released by a cam and the magneto turns rapidly, overtaking the engine. During the short space of time—barely 1-20 sec.—taken by the armature to make this movement, the engine position has altered very little, and it follows that a strong, hot spark is produced shortly after top dead center.

The exact point at which the spark occurs will be a little less than 18 deg. after top dead center if we imagine the engine being turned over by hand at a speed representing about 60 r.p.m. The slower the engine is turned the smaller will be the angle X between p and p₁.

If the case of an engine having variable ignition be taken, it will be seen that displacing the cam ring of the magneto simply varies the angle X and alters the position of p, P. When the armature is released, everything takes place as in the case of fixed ignition. The spark occurs several hundredths of a second earlier if full advance be given, but it occurs always at a point between P₁ and P₂, that is to say, after top dead center.

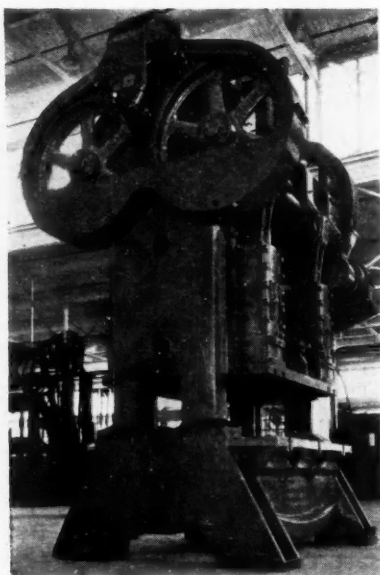
The sectional diagram (Fig. 2) shows the

spring box *A* attached to the driving shaft of the magneto and containing an ordinary coiled clock spring. On the exterior of this box are two cams, which lift the ends of the balanced pawls (*c, c*) and release the armature after it has been held back by the fixed stop *D*.

When the engine is turning at a speed of 120 r.p.m. or more, the weighted portions of the pawls are driven outward by centrifugal force and the point of each pawl rests upon a pin *E* below the level of the fixed stop. In these circumstances the appliance does not function and ignition proceeds normally.

Marquette Tool Develops Double Crankshaft Press

THE introduction of larger steel sheets for body stampings has brought to the fore the problems of stress distribution in blanking, piercing and drawing press operations.



The double crankshaft construction of the Marquette presses + + + +

The Marquette Tool & Mfg. Co., Chicago, in considering this problem has developed a line of four crank, double-crankshaft presses, providing a four-point suspension, and four-point stress application to the die-holding slide. The two crankshafts are synchronously driven in opposed direction from an electric motor driven mainshaft through herringbone gears running in oil, each

crankshaft having two cranks, with the four connecting rods used connecting to individual slide blocks incorporating a synchronized adjusting mechanism. The slide blocks in turn connect to the slide at each of four points, spaced in such a manner as to reduce the maximum area of die surface over which the stress from each crank has to be distributed.

With opposed rotation of the crankshafts providing opposed and balanced application of forces to the guide blocks and uprights, it is expected by the manufacturers that many of the common problems encountered in practice in stamping shops can be eliminated. Among these might be mentioned the ability to eliminate the play usually necessary in the guides, etc., in order to produce on older types of presses the larger stampings, etc., required by the industry.

An unusual feature of the new presses is in the method of vertical slide-adjustment to eliminate spacer or bolster plates for die-location. Each connecting rod is attached to a block locked in the guide by means of a pin through the block. The block in turn is provided with the adjustment screw, bearing against the buttress plate. The entire adjusting mechanism is inclosed, and the arrangement is such that all bending moments on the adjusting mechanism are eliminated. The latter is thus only required to take care of the upward pull in raising the slide. This adjustment can be varied a considerable amount, the usual maximum adjustment travel being from eight inches upward.

Another feature is the provision of two air tanks mounted on the crown of the press to counterbalance the weight of slides and dies. These cylinders are connected to the main air supply through a reducing valve to adjust the air pressure in the tanks according to the weight to be counterbalanced, in the same manner as the built-in air cushion press beds offered by Marquette Tool for the past three or four months are also controlled by a single reducing valve. Similarly the air cylinders are of the closed system type, there being no exhaust of air to the atmosphere.

The clutch and brake are separated, the clutch housing being mounted on the flywheel hub to reduce inertia forces in starting and stopping, and to provide increased cooling by the continuous rotation of the ventilated housing. The brake is mounted on the flywheel side of the main shaft beyond the bearing, but closely adjacent to it, and is interconnected with the clutch for simplicity of operation. A semi-automatic cam on the mainshaft permits the adjustment of the press to enable stopping in any position. All brake and clutch connections are of the tie-rod type for positive action.

Sweden to Add Fourth Truck Plant

SWEDEN at present has three plants for the manufacture of motor trucks and buses, viz., Scania-Vabis, Tidaholm and Volga. A fourth plant is to be added soon, as Nydquist & Holm of Trollhattan, who have been engaged in the production of railway equipment, plan to manufacture two types of buses, for 40-45 and 20-30 passengers respectively.

Monarch and Oliver-Hart-Parr Tractors Approved by Nebraska

Caterpillar and four-wheel types recently introduced successfully meet rating requirements of State's legal tests + + +

TWO reports of tractor tests have been issued recently by the Board of Tractor Tests of the State of Nebraska, separate tests having been made on a Monarch 50 and on an Oliver-Hart-Parr 2-3 plow machine. The reports bear Nos. 179 and 180.

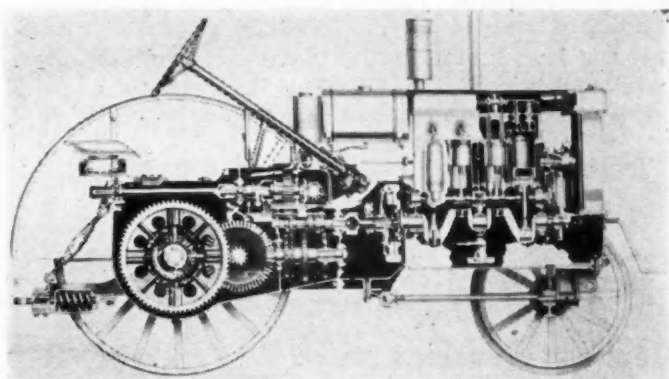
The Monarch 50, which is made by the Allis-Chalmers Manufacturing Company at Springfield, Ill., has a manufacturer's rating of 42-50 hp. Under the recommendations of the A. S. A. E. and the S. A. E. the highest permissible rating is drawbar, 43hp.; belt, 55 hp. In the maximum load test, which extended over 1 hr., the engine developed a maximum of 62.18 hp. at 1002 r.p.m., with a fuel consumption (gasoline) of 0.65 lb. per hp.-hr. and a loss of water from the cooling system of 0.039 gal. per hour. The temperature of the cooling medium averaged 202 deg. Fahr. and that of the atmosphere, 83 deg. In the rated-load test the engine developed 50.31 hp. at 999 r.p.m. with a fuel consumption of 0.633 lb. per hp.-hr.

In the drawbar horsepower, rated-load test the tractor developed a drawbar pull of 6000 lb. at a speed of 2.76 m.p.h., corresponding to a drawbar horsepower of 44.09. The slip on the drivers was 0.65 per cent and the fuel consumption was at the rate of 0.777 lb. per drawbar hp.-hr. In the maximum-drawbar-load test the machine developed a drawbar pull of 7213 lb. at 2.77 m.p.h., corresponding to 53.28 drawbar horsepower; in high speed it developed a drawbar pull of 4613 lb. at 4.08 m.p.h. (50.14 hp.), and in low speed, 10,573 lb. at 1.78 m.p.h. (50.14 hp.)

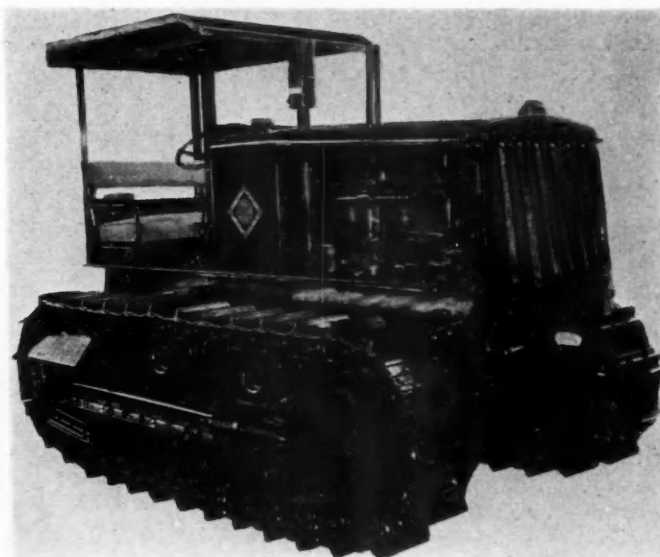
This tractor has a four-cylinder engine of 5¼ in. bore and 6½ in. stroke, with valves in the head. Both the inlet and the exhaust valves have a clear diameter of 2 in. The carburetor is a Zenith 1½ in. and the magneto an Eisemann. The engine has pressure lubrication, and is fitted with a flyball governor of the tractor manufacturer's own make, and with an air cleaner.

The tractor is of the crawler type. The clutch is of the single-plate type and is operated by hand. Drive is by inclosed gears and chain, and three speeds forward are obtainable, viz., 1.82, 2.76 and 3.99 m.p.h., and one reverse speed of

2.06 m.p.h. Each track consists of 32 links and is 13 in. wide and 20.93 ft. long. The total weight with operator, as tested, was 15,100 lb. The test extended over a period of 37 hours. At the beginning, 3,726 gal. of engine oil of 30 S. A. E. viscosity was introduced



Sectioned view of the Oliver-Hart-Parr four-wheeled tractor tested in Nebraska



The Monarch 50 caterpillar-type tractor, made by the Allis-Chalmers Mfg. Co., which was officially tested for rating by the Nebraska board

into the crankcase, and at the end, 2.938 gal. was drained from it. During the drawbar test the water pump packing was tightened, which constituted the only adjustment on the Monarch 50 made during the test.

Tests on an Oliver Hart-Parr tractor were made July 7-15, 1930. There is no manufacturer's rating on this tractor, but the maximum permissible rating under A. S. A. E. and S. A. E. recommendations is drawbar, 18 hp.; belt, 28 hp.

In the maximum load test the engine developed 30.29 hp. at 1192 r.p.m. at a fuel consumption (kerosene) of 0.677 lb. per hp.-hr., the loss of water from the cooling system during the hour the test lasted being 1.645 gal. The temperature of the cooling medium averaged 213 deg. and the atmospheric temperature, 101 deg. In the rated-load test the engine developed 28.30 hp. at 1191 r.p.m. with an average fuel consumption of 0.674 lb. per hp.-hr. In this case the atmospheric temperature was 105 deg. and the temperature of the cooling medium, 213 deg.

In the drawbar load test (rated load) in intermediate gear over a period of 10 hr., the tractor developed an average drawbar pull of 2031 lb. at 2.73 m.p.h., corresponding to a drawbar hp. of 18.99, the fuel consumption being at the rate of 0.865 lb. per drawbar hp. per hr. In the maximum-drawbar-load test the tractor developed the following drawbar pulls and horsepowers on the different gears: Low gear, 3241 lb.

at 2.73 m.p.h. (23.56 hp.); intermediate gear, 2303 lb. at 3.56 m.p.h. (21.86); high gear, 1781 lb. at 4.68 m.p.h. (22.22 hp.).

The Oliver Hart-Parr 2-3 plow tractor has an engine with four vertical cylinders of $4\frac{1}{8}$ in. bore by $5\frac{1}{4}$ in. stroke, its rated speed being 1190 r.p.m. The valves are in the cylinder head and both sets have a port diameter of $1\frac{3}{4}$ in. The engine is fitted with an Ensign $1\frac{1}{4}$ in. carburetor, an American Bosch magneto, a governor of the tractor manufacturer's own make, and a Donaldson air cleaner. Engine lubrication is by pressure.

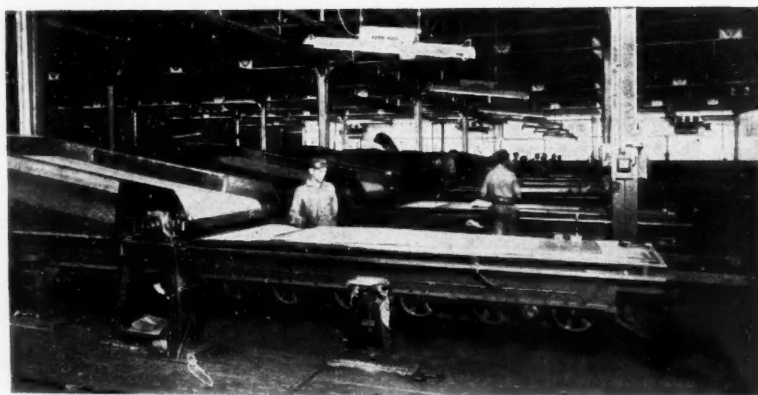
The tractor is of the four-wheeled type with two rear driving wheels. A Borg & Beck single-plate clutch, foot-operated, is fitted. The transmission affords three forward speeds of 2.6, 3.2 and 4.15 m.p.h. respectively, and one reverse speed of 2.9 m.p.h. Drive wheels are 44 in. in diameter and have a 10-in. face. The total weight of the tractor with operator, as tested, was 4420 lb.

The tests extended over a total time of 51 hours. At the beginning, 2.214 gal. of engine oil of 30 S.A.E. viscosity was poured into the crankcase, and at the end of the test 2.518 gal. was drained from it. The fuel used in the tests was kerosene.

The only entry under "Repairs and Adjustments" in the official report is as follows: "During the rated drawbar test a lug bolt was lost and the lug bent. The lug was replaced with a new one."

Republic Develops Mass Polishing for Stainless Steel

INTRODUCTION of stainless steel into this country brought with it the problem of mass production for the new metal. In Europe stainless steel was made in small quantities and applied to a limited number of small products. America's conception of the utilization of the metal was upon a grander scale.

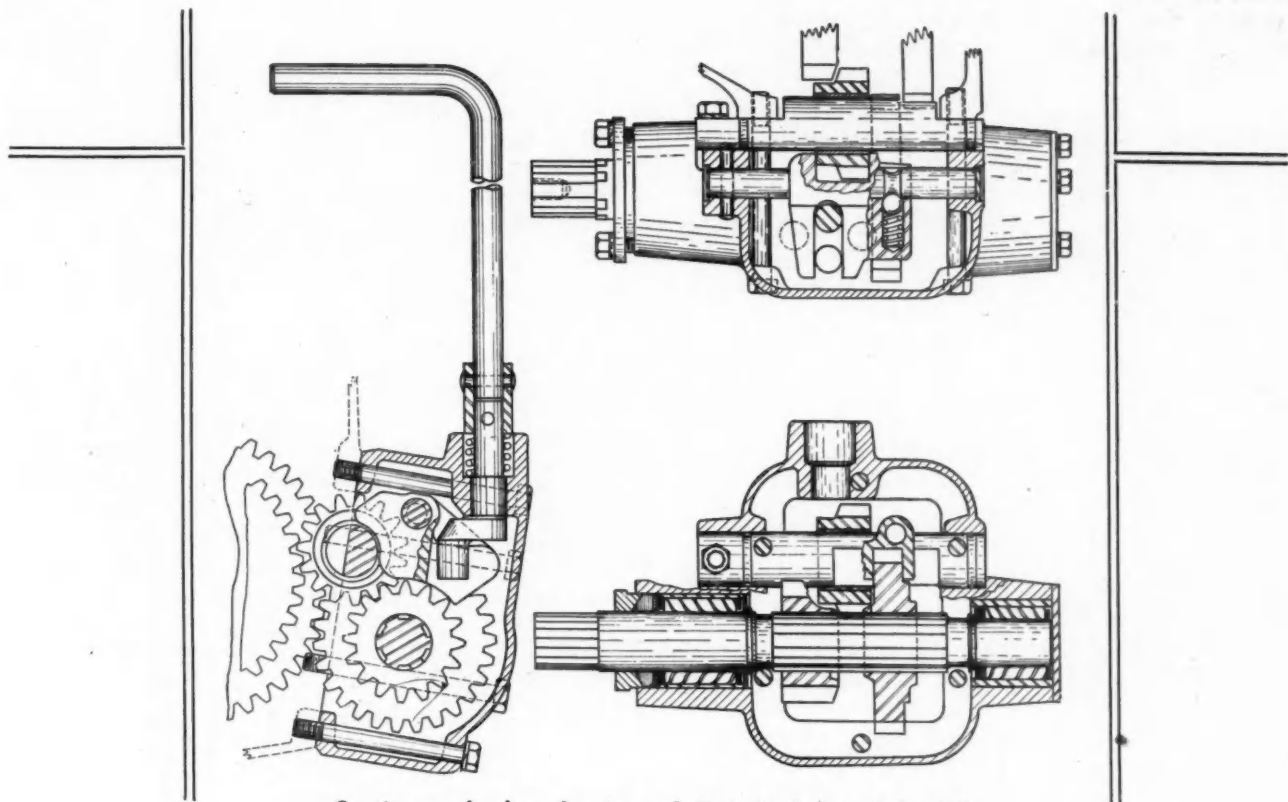


Polishing room, showing sheet handling equipment at the Massillon, Ohio, plant of the Republic Steel Corp.

If these markets were to be developed and served, it was necessary that stainless steel be produced in quantity. Before American manufacturers had gone very far in their experiments they discovered that the neck of the bottle of mass production lay pretty largely in the process of polishing. One of the most valuable qualities of stainless steel is its ability to take and hold fine polished finish. No facilities for quantity polishing of stainless steel existed.

Republic Steel Corp. at its Central Alloy works in Massillon has developed and installed an entire new polishing division equipped with specially designed machinery. Recent inauguration of this department provided the company with 40 polishing machines. There are three separate rooms so that the dust in the atmosphere of one room will not be carried into other rooms to mar the work of polishing.

Two forms of polishing are used. One is the sectional wheel, and the other is the endless belt. As a result of much research, the company has developed a moving table and an oscillating polishing roll. By means of this oscillating equipment, polishing lines on the sheets are eliminated and a higher and brighter finish is made possible.



Section and plan drawing of Detroit Power Take-Off

Reversible Power Take-Off is Developed

Detroit Harvester markets unit designed to fit over large S.A.E. standard opening in transmission housing. Derives power from two gears

A POWER take-off giving one forward and one reverse speed has been placed on the market recently by the Detroit Harvester Co., Detroit, Mich., and is being offered particularly to manufacturers of dump bodies, winches and sprayers as well as to manufacturers of other equipment requiring the reversible feature. The forward speed of Model 6588 Detroit power take-off is in the same direction as the rotation of the crankshaft and is equal to 65 per cent crank-shaft speed. The reverse motion is equal to 88 per cent of engine speed. The unit is designed to fit over the large S.A.E. standard opening in the transmission housing and takes power from two gears of the transmission.

The shifter fork forging is milled out to fit over both the 26-tooth forward gear on the splined-driven shaft and also on the bushed idler pinion on the idler shaft. This arrangement of shifting gears not on the same shaft simultaneously has the advantage

that the idler is completely out of mesh and stationary except when the power take-off is functioning in reverse. No difficulty is said to be experienced in shifting the idler into two gears at once, as the 16-tooth driven pinion is spaced so that the idler meshes with the gear in the transmission slightly before it comes in contact with the driven pinion. This allows use of the clutch to rotate the idler if it should ever refuse to mesh with the driven pinion because of teeth butting end to end.

The reverse idler pinion is located in such a position that the component loads from the two gears with which it meshes are balanced in part, which allows the use of a phosphor bronze bushing.

The restricted space made it necessary to place the center of the idler shaft $\frac{1}{8}$ in. from the transmission housing. Accurate milling of a flat at each end allows this shaft to be assembled in this position, the flats forming part of the surface which clamps

against the pad of the transmission. A groove turned near each end of the shaft has a felt strip laid in when assembling, and this is designed to prevent oil leakage.

A wide notch is milled in the idler shaft to provide clearance for the large gear, but the portion of the shaft on which the idler pinion is located when rotating is not reduced.

Shifting is effected by rotating a small crank. This type of control is easily installed, as it requires only a single hole in the floor boards, no brackets being necessary to hold the handle.

Propose A. T. C. for Radio Ignition Shielding

(Continued from page 410)

as generators, voltage regulators, or any other circuit wherein a spark occurs, are effectively shielded. Specifications for bonding the airplane are given in Part III, section 9 of this bulletin.

B. Test of complete shielding assembly for spark over—In this test the ignition leads are inclosed in the shielding manifold and terminate in the magneto distributor blocks with shielding covers at one end and in the shielded spark plugs at the other end. All connections between the component parts of the shielding assembly must be the same as when installed on the airplane engine. Provision should be made to ground the shielding assembly at points corresponding to grounds made when installed on the airplane engine. The magnetos are not used in this test in order to prevent damage to them. Mica insulators should be placed between the spark-plug points to prevent sparking at the test voltage to be employed.

A voltage of 15,000 volts effective (60 cycles or higher in frequency) should then be applied between all the ignition wires in parallel and the ground for a period of five minutes. Under this condition no sparking should occur. The condition of sparking may be determined by a sudden increase in the deflection of an indicating instrument connected in series with the above circuit. A regulating resistor is then also necessary to prevent burning out of this instrument.

C. Test for insulation resistance during and after exposure—The same set-up as in the previous test shall be employed, except that the mica should be removed from the spark-plug gaps and provision made to protect the interior of the spark plugs from moisture. The complete assembly should be subjected to a spray of water for a period of three hours and readings of the insulation resistance of the individual leads to ground taken at intervals of one hour during this exposure. At no time should the insulation resistance of any lead to ground be less than 1 megohm.

D. Test for corona—A suitable length of high-tension cable shielded in exactly the same way as the ignition leads extending from the main portion

The shifter fork moves on the shifter shaft, and a plunger spring and ball are used to locate it in one of the three grooves turned in the shifter shaft, for forward, neutral and reverse positions.

The 1¼-in. power take-off shaft is mounted on roller bearings and is splined at the delivery end to take a universal joint or coupling. The unit is built both in a heavy-duty model, as illustrated, for operating winches, and also in a light-duty dump-body model. The latter allows lowering of dump bodies of the full mechanical type from any partially raised position if desired.

of the ignition manifold or casing to the spark plugs and flexed at the least radius of curvature used shall be subjected to a voltage of 15,000 volts effective (60 cycles or higher in frequency) between conductor and shield for a period of two hours. Under this condition no sparking should occur.

Cork Abrasive Wheel for Honing and Polishing

A NOVEL development holding considerable promise is the recent introduction of bonded cork-abrasive wheels for grinding, polishing and honing operations. Cork wheels have already given valuable service in the grinding and polishing of glass and this latest step is expected to extend its sphere of usefulness to other important manufacturing processes.

So far as we can learn, bonded cork abrasive wheels have been used in Germany for almost three years and now a well-known Germany agency has succeeded in interesting a number of prominent manufacturers in this country. One of the largest aircraft engine manufacturers is experimenting with these cork wheels to improve the quality of honed cylinders. Preliminary work in their plant indicates that the cork wheel produces a beautiful honed finish on their cylinder barrels which are of forged alloy steel. Several other large manufacturers are conducting similar experiments in their shops.

The relative importance of this development may be gaged by the fact that one of the largest cork manufacturers in this country has done considerable research work on this very problem for almost five years. Progress has been satisfactory although the commercial stage has not yet been reached due to the complexity of the problem. It is hoped that the development from now on will gain impetus by coordinating research work on the wheels themselves with actual production problems.

At the present writing the field of the cork abrasive wheel seems to lie logically in the polishing and honing of metals. In polishing particularly there is speculation in the possibility of applying these wheels to the finishing of rustless steel parts and similar operations where a resilient wheel is necessary.

JUST AMONG OURSELVES

The Worm Turns —On His Vacation

WALKING down Main Street the other day we saw quite a crowd collecting around a red-faced, excited individual who was stamping his feet and yelling "NO! NO! NO! Dammit, NO!" at the top of his voice. Just as we paused to see what the excitement was all about, a burly cop barged on to the scene, collared the exponent of vociferous negatives, and demanded an explanation of his unusual conduct.

"You can't arrest me," the man protested. "I haven't committed any crime. I can stand here and say 'No' all I want to."

"You may be right," the policeman admitted, "but what is the big idea anyhow?"

"Well, I'll tell you, officer," came the reply. "Since you put it that way I'll give you the low-down. I'm a Yes-man on a two weeks' vacation."

Temptation to "Yes" Strongest in Hard Times

FUNNY thing about Yes-men. Their number tends to multiply when business gets kinda bad and pink slips begin making frequent appearances in pay envelopes.

That's natural. Few men can afford to gamble with their jobs—and disagreement with the boss when he's pretty much worried about the business situation anyhow isn't always the safest road to security. Plenty of good able employees would rather be president than right.

It is tough on a company, though, to have a general tendency toward a diminishing amount of frank, honest, intel-

ligent expression of business ideas just when stringent economic conditions are increasing the need for just such candidness.

In good times or in bad, any automotive executive has to check carefully to be sure he is not being "Yessed." In times of economic stress, however, he has to check doubly, for the tendency to "Yes" the boss in such times is doubly strong.

When Authority Rather Than Ideas is Approved

SOME of the best executives we know in the industry guard pretty carefully and specifically against being "Yessed" at all times. Some others, whose general executive ability is equally great, just don't sense the fact that it is their authority rather than the soundness of their ideas that subordinates frequently are voicing agreement with.

We sat in the office of the president of a body company a few weeks ago, when his chief engineer and a designer brought in a wooden model of a new body design about to be submitted to a customer. The president studied the model carefully from all angles, expressed a general approval of the design, then made two specific suggestions for modification. Having made them he asked his engineers, "What do you think about making those changes?"

Both thought the president's suggestions were excellent; one enlarged upon them.

But twice before the engineers left the room, this chief executive queried bluntly:

"Do you really think those two changes will help the design? You're not just 'Yessing' me, are you?"

That chief executive has the right idea. He makes it perfectly obvious by word and by tone of voice that he is running his business for the purpose of getting maximum results and not for the purpose of keeping his own ego inflated.

The "Yes-Man" Works for Those Who Prefer Him

RESPONSIBILITY for elimination of uneconomic "Yessing" lies more with the executive himself than with his subordinates. He creates the atmosphere; he makes suggestions or criticisms easy or hard to make; upon him rests the responsibility of the business or the department—for the Yes-man works for every executive and sub-executive who likes to employ him. Company presidents frequently are less prone to encourage this genus than are sub-executives and department heads—that is one reason, perhaps, why they are company presidents.

A Few Predictions Anent Conventions

THE convention season is about to begin. We predict that there will be more meat in convention programs during the 1930-1931 season than ever before; that fewer convention attenders will bring away more ideas and information than in several years past; that more active searching for new methods and more specific attempts to solve special problems will be characteristic of the gatherings this fall and winter—

And that those with curious, alert minds will take infinitely more away from the meetings than those who go with merely receptive minds just as always in the past. Selah.—N.G.S.

In the Realm of Metallurgy—New

Modulus of elasticity of spring steel is substantially constant when determined under normal static loading conditions

Determining Modulus of Elasticity of Spring Steel

EXPERIMENTS on spring steels have been carried on in England by the National Physical Laboratory for the Springs Research Committee of the Department of Scientific and Industrial Research for more than five years and a number of reports on different phases of the work have been published. A recent report by Dr. G. A. Hankins, published in *The Engineer*, deals with the variation of the modulus of elasticity of spring steel when over-strained.

Dr. Hankins states that the modulus of elasticity of spring steel is substantially constant when determined under normal static loading conditions. As a result of a large number of determinations of the tensile modulus of elasticity of eight representative spring steels after various quenching and tempering treatments, it was found that the modulus varied between the comparatively narrow limits of 29.5×10^6 lb. per sq. in. and 30.9×10^6 lb. per sq. in. Similarly the modulus of torsional rigidity varied from 11.3×10^6 lb. per sq. in. to 11.9×10^6 lb. per sq. in., and it was concluded that mean values of 30.1×10^6 lb. per sq. in. and 11.6×10^6 lb. per sq. in. could be used for normal design purposes irrespective of the composition or heat treatment of the particular spring steel under consideration.

Experiments recently made by Dr. Hankins as well as an experiment made by Dr. Cook of Kings College, London, a member of the Springs Research Committee, show that a small decrease in the modulus of elasticity occurs when the original material has been subjected to definite non-elastic strain and is then examined in regard to hysteresis after being brought into a cyclic state. The magnitude of the change is not sufficient to make it of importance in the normal service of laminated springs and engine valve springs, but in accurate calibrated loading springs it may be necessary to consider it.

Impregnate Wood With Metal

A WOOD impregnated with metal, which has been developed by Dr. H. Schmidt, is mentioned in the Industrial Bulletin of Arthur D. Little & Co. for August.

The new metal-wood retains its original structure,

but is combined under pressure with molten tin, lead or other low-melting metals or alloys. The degree of impregnation is indicated by the increase of the specific gravity of a sample of walnut to 3.83; hardness may also be increased to more than three times the original value.

The treated wood may be cut and machined by the usual methods and with much the same facility.

Uses suggested for the metal-wood are principally those depending upon its unusual and rather attractive appearance. There is some possibility that it may be suitable for special bearings, such as those of the oil-less type, as well as for somewhat similar use in meeting unusual pressure resistance requirements in machine construction.

Weldability Tests for Sheet Steel

IF sheet steel is to be welded by the oxy-acetylene process, proper selection of the sheet material is one of the essentials to success. No matter how skilled the welder may be or how good his equipment, if he is handicapped by poor material the welded product will not be up to standard. The following instructions for making tests of sheet steel with respect to its weldability by the oxy-acetylene process were furnished by the Linde Air Products Co.:

"Chemical composition alone is not sufficient indication of the quality of steel sheet. Welding qualities are determined to a great extent by the presence or absence of minute amounts of impurities in the steel. This holds especially true for thin sheet steel. These impurities are sometimes so small that it requires a good microscope to detect them. They do not show up in the chemical analysis but they have a very decided effect on the behavior of the steel under the welding flame. It is always advisable, therefore, to specify that the steel shall be suitable for welding and as a further check to test lots of steel as they are received from the mill. Such a test is easily made in the following manner:

"Select a piece of sheet from the lot, about 6 in. square, and place it flat on the welding table. Fit a welding tip to the blowpipe on size smaller than that prescribed for work on your welding chart. Light the blowpipe and adjust the flame to neutral. Hold the blowpipe so that the tip of the inner cone of the flame is about $\frac{1}{8}$ in. away from the sheet. Move the flame slowly along a straight line so that the sheet will be melted without burning clear through. After a strip about 3 in. long has been melted in this way, hold the

Processes and Materials

blowpipe still until a hole is burned through the sheet.

"If the sheet is high grade the path followed by the blowpipe will be free from an excess of oxide or scale and regular and smooth on the upper side. The underside of the test sheet will show a slight sag of smooth metal, free from oxide. The hole will be round and have smooth, rounded edges.

"Sheet of inferior quality will show an oxide deposit on the upper side, part of which will be porous or flaky scale. There will also be a succession of irregular ripples, higher in the center than on the edges. The underside will show a sag that is covered with oxide. There may even be a series of small holes blown through by the sparking action of the impurities. In poor sheet the metal will be burned through very soon after the blowpipe is held stationary, in much less time than is necessary to put a hole in good sheet. The hole, incidentally, will be irregular with rather ragged edges. When the test sheet cools examination will disclose porous, spongy-looking globules of oxide on the edges of the hole.

"This simple test, which can be quickly made on average samples selected from each lot of steel, provides assurance that the sheet is of the proper quality to make a high-grade product."

Relation Between Tests

RESEARCH Paper No. 185 of the Bureau of Standards, on Relations Between Rockwell and Brinell Hardness Numbers, by S. N. Petrenko, supersedes Bureau of Standards Technical Paper No. 334, on the same subject and by the same author, which was published in 1927. The research paper includes some of the data of the earlier publication and, in addition, the results of many more tests of various heat-treated steels.

Comparisons Charted of Averages for Steel Tests

WHILE there are no absolute quantitative relations between the customary hardness test values and the tensile strength, comparison charts or tables giving the approximate relations between Brinell, Shore and Rockwell hardnesses and tensile strength are often useful. The comparisons given by the chart herewith were selected to present averages for so-called

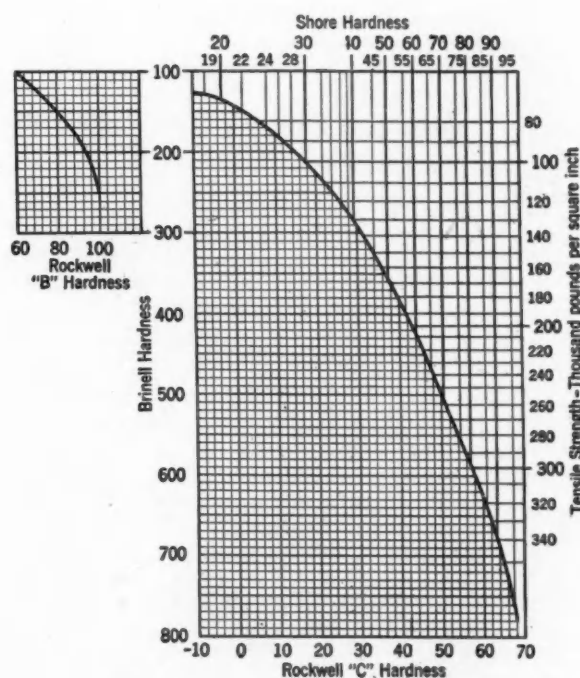
Average relation between Brinell, Shore and Rockwell hardnesses and tensile strength of structural steels compared in chart form + + + + +

structural steels, and in particular the nickel-containing structural alloy steels. They are based on a large amount of data both from the files of the Research Laboratories of the International Nickel Co., Inc., Bayonne, N. J., and from published reports in metallurgical literature.

The Rockwell-Brinell hardness relations are based on data published by Moore, Nicollett, Petrenko and Hruska. The Brinell-Shore hardness relations were determined, at low Shore hardness values, from data on structural alloy steels published by Camp and Francis and at high hardnesses from Inco laboratory test data.

The relations between Brinell hardness and tensile strength were determined largely from Inco laboratory test data and results reported by Gillett and Mack.

The chart is reproduced from Bulletin No. 16 on Nickel Steel, published by the International Nickel Co., Inc., New York.

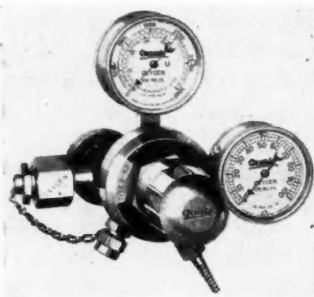


Approximate relations between Brinell, Rockwell and Shore hardnesses and the tensile strengths of structural alloy steels

NEW DEVELOPMENTS—AUTOMOTIVE

Oxweld Two-Stage Oxygen Regulator

THE Oxweld Type R-43 Oxygen Welding Regulator, recently introduced by Oxweld Acetylene Co., New York, guarantees a freedom from fluctuation in line pressure by means of a system of two-stage pressure reduction. This is accom-



plished through two separate and independent sets of diaphragms, valves and springs. The full cylinder pressure of 2000 lb. enters the regulator through a stem-type valve and is controlled by the first stage diaphragm. In this stage the pressure

is reduced to less than 250 lb. per sq. in. This pressure will be constant for any one regulator, but varies somewhat with different regulators. The pressure here is non-adjustable.

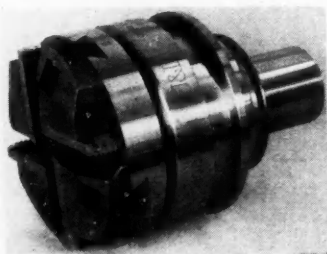
The oxygen then passes from this first reduction assembly to a second stem-type valve and diaphragm assembly where the pressure is reduced to the working pressure desired by the operator. This pressure is regulated by the operator by means of the adjusting screw, and any operating pressure may be obtained without fluctuation.

Jones & Lamson Tangent Type Die

A NEW tangent type die, their Model 21, has been marketed by the Jones & Lamson Machine Co., Springfield, Vt. In this die the chasers are held tangent to the work and possess the unique advantage that the dull and worn portion on the ends may be completely removed at a sacrifice of only a fraction of the length of the chasers. Furthermore, as the grinding is done on the ends of the chasers and not on the chamfer, machine adjustments for the length of thread

do not have to be made when chasers are changed. A worn-out set works just as close to a shoulder as a new set.

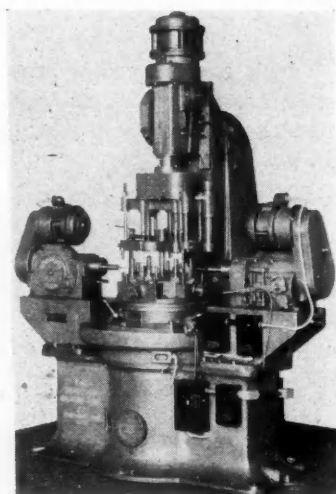
Chasers have the thread profile ground at the correct helix angle for a given diam-



eter and pitch and are at the same time spaced relatively to one another so that they track perfectly. The dovetail on the back of the chaser is also ground and ratchet teeth are cut on the tongue of the dovetail which engages a group of mating teeth in the chaser holder. The chasers are sharpened by removing from the end an amount equal to the pitch of the teeth on the back. They are then measured in the gage and a graduated micrometer screw tells exactly where the cutting edge will be when the chasers are in the die.

Bradford Develops 3-Head Drill Press

THE three-head machine illustrated herewith has been developed by the Bradford Machine Tool Co., Cincinnati, Ohio, with special tooling equipment for producing a pump body. The



tooling equipment consists of four work-holding fixtures mounted on a hand-operated turret. One station is used for loading and unloading the fixture, while a series of drilling and reaming operations take place at the other three stations. The horizontal units drill single holes, while the cluster box,

mounted on the vertical head, carries the tools in three groups, in order that this unit may perform operations in each of the three working stations.

This machine is readily adaptable for general production work by changing the tooling equipment. Multiple-spindle cluster boxes may be mounted on the horizontal units, and the turret may be arranged for automatic indexing, if necessary.

Each unit is equipped with an individual motor drive, and an additional motor is provided to operate the pump for the coolant supply system. Each motor is provided with an independent switch, having overload and underload protection. The starting and stopping of the entire machine is controlled through a single push button.

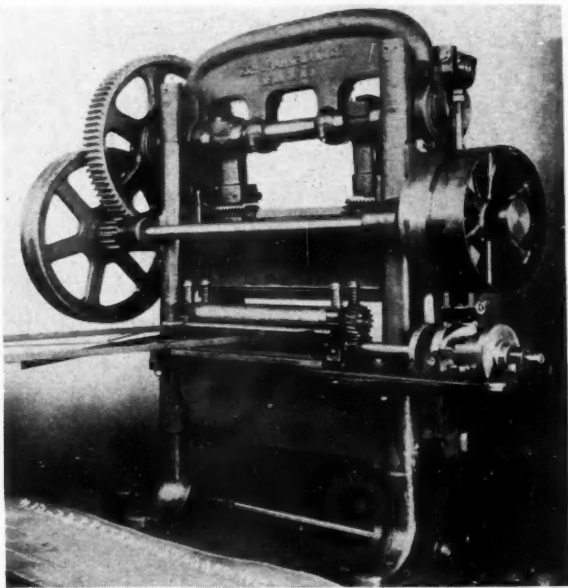
The feeding mechanism is controlled by means

PARTS, ACCESSORIES AND PRODUCTION TOOLS

of a hand-operated poppet valve mounted near the front of the table, which connects air-operated trip-dogs attached to the feeding levers of each unit, and all spindles advance simultaneously in rapid traverse, automatically slow down to their proper feeding strokes, and then return in rapid traverse to their starting point.

Zeh & Hanemann Double Crank Power Press

FOR blanking small parts, such as transformer laminations in large quantities, the Zeh & Hanemann Co., Newark, N. J., have brought out a Double Crank Power Press with automatic roll feed, which permits cutting sheets without prior slitting. This press has a capacity of 50 tons and provides 50 strokes per minute. Using five dies, an output of 250 blanks a minute may be obtained. Arranged with staggered rolls the feed works on the pilgrim step



principle: Forward, punch; rightward, punch; forward, punch; leftward, punch; etc.

Total weight is 10,000 lb. The distance between uprights, 48 in. Maximum sheet size 36 in. wide, 8 ft. long.

Oxweld Aluminum Welding Rod

THE Oxweld Acetylene Co., New York, has introduced a new welding rod, designated Oxweld No. 23 Aluminum Rod, which is recommended

for welding either aluminum sheet or castings when the metal is tightly held in jigs, and is not free to move.

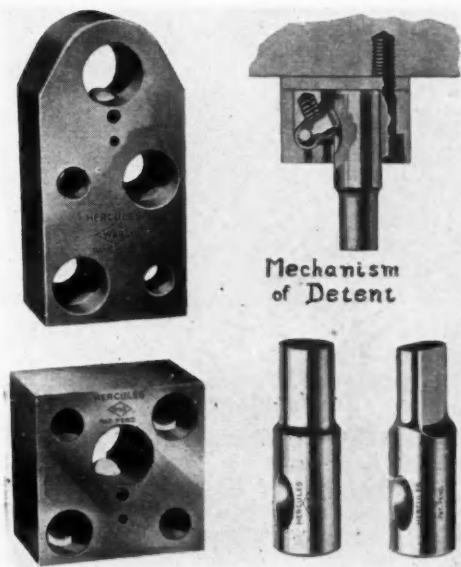
At temperatures just below their melting point, aluminum casting alloys possess very little strength and have a high contraction coefficient. The combined effect of these two properties may under certain conditions cause cracks to occur adjacent to welds. The new welding rod is recommended for welding these alloys because of the fact that its melting point is lower than that of the metal being welded.

Hercules Interchangeable Punches and Retainers

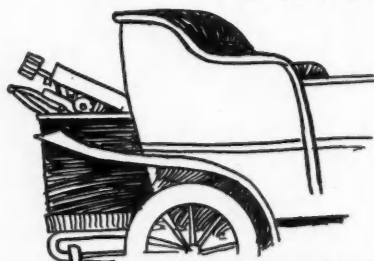
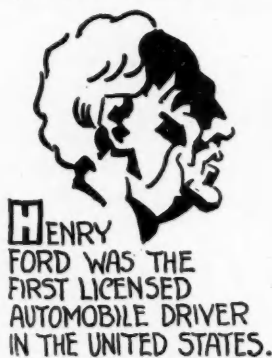
HERCULES Interchangeable Punches and Retainers, recently introduced by Whitman & Barnes, Inc., Detroit, Mich., present an advance in metal punching practice, the principal advantage of which eliminates the necessity of removing the die from the press to change punches.

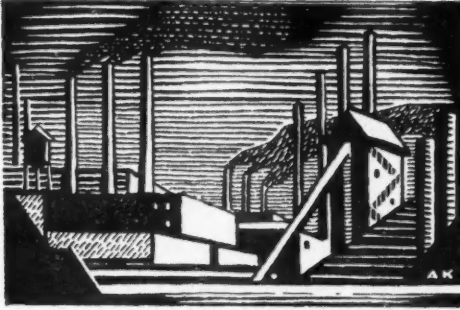
Other advantages may be summed up as follows: (1) Lower die building cost; (2) Easier and quicker setups; (3) Reduced "down-time" for die repairs; (4) Time lost by broken punches eliminated; (5) Lower die maintenance cost.

The Hercules Interchangeable Punch system consists of a removable punch held in a retainer by a detent (latch or pawl) acting in recess in the shank of the punch. The punch is instantly released when the detent is pushed upward out of the recess by an extractor pin working through the retainer block.



Automotive Oddities — By Pete Keenan





NEWS OF THE INDUSTRY

Tariff Commission Members Sworn In

Hoover Appointees Begin Career Lacking One Colleague to be Named

WASHINGTON, Sept. 18—Henry P. Fletcher of Pennsylvania, chairman of the new Tariff Commission which will administer provisions of the Smoot-Hawley act, was sworn in today with the four other recently appointed commissioners. The other members are Thomas Walker Page of Virginia, Democrat; Dr. John Lee Coulter of North Dakota, Republican; Edgar B. Brossard of Utah, Republican, and Alfred P. Dennis of Maryland, Democrat. A sixth member is to be appointed and all must be confirmed by the Senate.

The largest task before the new tariff commission, reorganized under the Hawley-Smoot act, relates to investigations under the flexible provision. These have been ordered by Senate resolutions chiefly. There are 34 of them. Not one of them concerns any product in the automotive industries. These studies necessarily will require considerable time and great activity on the part of the commission. The time necessary, however, will not be so great as would have been the case under the Fordney-McCumber act. This is due to the fact that the provision as revised in the Hawley-Smoot law does not require investigation abroad, which was a source of much delay and international irritation, under the former act. Moreover, the inquiries probably will be speeded up faster than is generally thought since some of them concern subjects which previously have been investigated. In such instances it will be necessary only to bring up-to-date data now in the hands of the commission.

The work ahead of the commission is nevertheless great enough to require that it organize and become active at once. The latest members selected by President Hoover were announced last Tuesday, and include Edgar B. Brossard, of Utah, who was chairman of the commission; Alfred P. Dennis, Maryland, a member of the commission also, and Dr. John Lee Coulter, North Dakota, who was chief economist of the commission. The reappointment of Mr. Brossard and Mr. Dennis had been expected.

Boeing Tests New Plane

SEATTLE, Sept. 18—A new pursuit plane has been tested at the Seattle plant of the Boeing Airplane Co. This airplane, which is known as Boeing Model 218, has a metal monocoque body and biplane wings similar to the Boeing P-12C's.

Mrs. E. L. Cord Dies

CHICAGO, Sept. 15—Mrs. Helen Marie Cord, wife of Errett L. Cord, president of the Auburn and Duesenberg automobile companies, died yesterday following an illness of several months, in the Cord apartment in the Drake Tower, 179 Lake Shore Drive. Mr. Cord and two sons, Charles Errett, 14, and Billy James, 12, were at the bedside. Before her marriage, Mrs. Cord was Miss Helen Marie Frische of Cincinnati.

Show Decision Pends

DETROIT, Sept. 18—Members of the executive committees of the National Standard Parts Association and of the Motor and Equipment Association met here today behind closed doors to consider a proposal of the M. & E. A. that the two associations hold a joint show in Cleveland, Nov. 17-22.

As *Automotive Industries* goes to press the executive committees were still in deliberation and no statement could be obtained regarding the possibility of a joint show.

A poll of N. S. P. A. members previous to the meeting of the committees showed a large count in favor of the joint event. Under the joint arrangement there would be 450 exhibitors and it is expected that 15,000 members of the automotive trade units would attend.

Editors to Broadcast

WASHINGTON, Sept. 18—A group of business paper editors, including Norman G. Shidle, directing editor of *Automotive Industries*, will broadcast over a radio chain of the Columbia Broadcasting System on the evening of Monday, Sept. 22, at 7.30 o'clock, Eastern Standard Time. Each editor will review the business outlook in the industry he represents. There will be thirty-nine stations included in the circuit. Stations WABC, New York, WXYZ, Detroit, and WMAQ, Chicago, among others, will carry the program.

Imperial Airways Plan New Ships

Will Have Larger Passenger and Mail Capacity Than Any Now Built

LONDON, Sept. 8 (*by mail*)—The air route from London to Cape Town will be opened early next year by Imperial Airways with new machines claimed to have a bigger passenger and mail capacity than any airplanes yet constructed for commercial service. There will be four distinct types. The section from London across Europe to the Mediterranean will be worked by 40-seated Handley-Page Jupiter-engined air liners developed from the Handley-Page Rolls-Royce liners in service on the cross-Channel routes during the past few years. Passengers and mail reaching the Mediterranean will be transferred to four-engined flying boats for the flight to Egypt.

Thence to Central Africa all-metal flying boats will be used, following the River Nile to the Central African lakes. The fourth stage to Cape Town will be worked with three-engined Armstrong Siddeley land planes.

The flight from London to Cape Town will occupy about nine days, and a fare of approximately £125 will be charged. Cairo will become the aerial junction of the Near East, with air services radiating from it to Great Britain, Iraq, Persia, India, Sudan and Central and Southern Africa.

When the new trunk route through the heart of Africa is in operation, it is proposed to open branch air lines which will connect the main route with Kenya Colony, the Congo, and the principal ports on both the west and east coasts of Africa, the whole forming a network of air lines affording rapid communication between all the principal business centers of Africa.

Reo Appoints Sperry

LANSING, Sept. 18—M. F. Sperry, who started with Reo in 1925 as manager of the distributing organization at Duluth, Minn., has been appointed regional manager in the Mid-Atlantic district, Elijah G. Poxson, general sales manager of the Reo company, announced here.

Citroen Cuts Prices On Two New Models

Reductions Are British
Record for Year

LONDON, Sept. 8 (by mail)—The biggest price cuts yet announced to apply to passenger cars made or sold in England are those attached to the Citroen cars, which for the British market are largely produced at the plant at Slough near London. Two models constitute the program; one is the 13-30 hp. (1.6 liter) four with a wheelbase of 112 in. and 52 in. track; the other the 20 hp. six (2.9 liter) with 116 in. wheelbase and 56 in. track. The four with an all-steel sedan body is reduced to £185 from £255; a de luxe version with sliding roof, furniture hide upholstery, safety glass, bumpers and luggage grid is £215 instead of £295.

From £298 the standard six-cylinder sedan is reduced to £235, while the de luxe rendering is now £265 instead of £345. All cars, both fours and sixes, have vacuum servo braking.

These reduced prices are said to be due to a much bigger production schedule at Slough for 1931, and to the co-operation of some 400-500 British suppliers of materials and accessories.

Ex-Cell-O Passes Dividend

DETROIT, Sept. 15—Directors of the Ex-Cell-O Aircraft & Tool Corp., at a meeting yesterday, passed the regular quarterly dividend of 20 cents, payable Oct. 1. In June the directors declared a quarterly dividend of 20 cents placing the stock on annual basis of 80 cents. Previously it had been on an annual basis of \$1.20 per share.

C. I. T. to Finance Stinsons

NEW YORK, Sept. 16—The Stinson Aircraft Co., Wayne, Mich., a subsidiary of the Cord Corporation, Chicago, has entered into a contract with Commercial Investment Trust, Inc., under the terms of which C.I.T. will finance the instalment sales of Stinson aircraft.

Thompson Books New Orders

CLEVELAND, Sept. 16—Thompson Products, Inc., reports receipt of important orders from Lycoming, Cadillac, Chrysler and Buick since the first of the month. The Lycoming order, received today, is for 160,000 valves and will cover Auburn motor production over an eight-month period.

Cole Leaves Durant

LANSING, Sept. 18—Roy E. Cole has announced his resignation as chief engineer of Durant Motors, Inc.

Before his association with Durant about two years ago Mr. Cole was chief engineer for Dodge Brothers. His other automotive experience includes places in the Continental Motors and Chalmers organizations.

Lansing Plants Employ More

LANSING, Sept. 17—Employment in Lansing's 18 major factories, largely automotive and automobile accessory plants, showed an increase last week over the preceding week. This was the fourth successive week in which a gain was registered. Addition of many men by the Reo Motor Car Co. has brought about the upward trend.

Chevrolet Plans Radio Program

DETROIT, Sept. 20—Chevrolet Motor Company will go on the air over more than 100 radio stations throughout the country early in October in a series of weekly programs of one-half hour duration. R. K. White, advertising manager of Chevrolet, announced today. Each program will be known as "Chevrolet Chronicles," and will consist of personally narrated experiences of prominent American war veterans. Capt. E. V. Rickenbacker will introduce the speakers to each audience. The programs will continue until late in the autumn.

Describes Farm Trucking

WASHINGTON, Sept. 18—Motor transportation of farm products is as yet practically unorganized and for the most part is in the hands of independent truckers, according to a paper on "Transportation of Farm Products" presented by Miss Caroline B. Sherman, Bureau of Agricultural Economics, Department of Agriculture, last Tuesday afternoon before the Inter-American Conference on Agriculture, Forestry and Animal Industry. Miss Sherman said that while there are now daily and weekly market news services reporting rail and boat shipments of fruits and vegetables en route, no method has yet been found for making similar reports on motor truck shipments.

Durant-Mathis to Employ 25,000

LANSING, Sept. 16—Production of the Mathis automobile in this country will give employment to some twenty or twenty-five thousand men and women by Dec. 1, William C. Durant, president of Durant Motors, Inc., announced here Monday. This will include the people to be employed in the main assembly plant at Lansing and in parts factories.

DiVco Buys Step-N-Drive Corp.

DETROIT, Sept. 18—John Nicol, president and general manager of the DiVco-Detroit Corp., has announced the purchase of the Step-N-Drive Corp., Buffalo, N. Y.

Allied Motor Declares

DETROIT, Sept. 16—Allied Motor Industries has declared its regular quarterly dividend of \$1 on preferred stock payable Oct. 1 to stockholders of record Sept. 23.

General Motors Sales Better During August

Exceed July Figure, in
U. S. and Foreign Territories

NEW YORK, Sept. 18—During the month of August General Motors dealers in the United States delivered to consumers 86,426 cars, according to an announcement made today by Alfred P. Sloan, Jr., president. This compares with 80,147 in the month of July and with 151,722 in August, 1929. Sales by General Motors manufacturing divisions to dealers in the United States amounted to 76,140 cars, as compared with 70,716 in July and as compared further with 147,351 in August, 1929.

Total sales to dealers, including Canadian sales and overseas shipments, amounted to 75,610 cars, or over 3600 cars per day, as compared with 79,976 in July and as compared further with 168,185 in August, 1929.

The following table shows sales to consumers of General Motors cars in Continental United States, sales by the manufacturing divisions of General Motors to their dealers in Continental United States, and total sales to dealers, including Canadian sales and overseas shipments:

U. S. Sales to Consumers			
	1930	1929	
Jan.	74,167	73,989	
Feb.	88,742	110,148	
Mar.	123,781	166,942	
Apr.	142,004	173,201	
May	131,817	169,034	
June	97,318	154,437	
July	80,147	147,079	
Aug.	86,426	151,722	

U. S. Sales to Dealers			
	1930	1929	
Jan.	94,458	95,441	
Feb.	110,904	141,222	
Mar.	118,081	176,510	
Apr.	132,365	176,634	
May	136,169	175,873	
June	87,595	163,704	
July	70,716	157,111	
Aug.	76,140	147,351	

Total Sales to Dealers, Including Canadian Sales and Overseas Shipments			
	1930	1929	
Jan.	106,509	127,580	
Feb.	126,196	175,148	
Mar.	135,930	220,391	
Apr.	150,661	227,718	
May	147,483	220,277	
June	97,440	200,754	
July	79,976	189,428	
Aug.	85,610	168,185	

Test Results Reported

CHICAGO, Sept. 16—Only 335 of the 4385 automobiles examined in the Evanston accident prevention bureau tests conducted over the last two weeks, were found to be in excellent driving condition. There were 1850 with good brakes. Other figures announced by the bureau reveal that 3763 failed to get official approval because of improper elevation of headlights; 2189 with headlights out of focus; 921 with defective stop-lights.

Sterling Sales Improve

CHICAGO, Sept. 16—Officials of Sterling Motor Truck Company report greatly improved sales activities within the last 60 days.

Kissel Gets Receiver Following Bond Suit

Federal Court Names Milwaukee Attorney

MILWAUKEE, Sept. 15—The Kissel Motor Car Co., Hartford, Wis., was placed in the hands of a receiver in Federal court here today, following the institution of foreclosure proceedings on a trust mortgage by Melvin A. Traylor, Chicago, trustee for the bondholders. Carl F. Geilfuss, Milwaukee attorney, has been appointed receiver by Federal Judge Geiger. The issue is dated April 1, 1922, and is in the sum of \$750,000. The unpaid balance is \$523,100. The mortgage is secured by all of the company's property, including plant, patents, formulas and trade marks.

Up to April 1, 1925, payments amounting to \$226,900 had been made. Arrangements were then made for a sinking fund to meet further payments at the rate of \$18,750 semi-annually. In case of failure to pay, the agreement permits the trustee to declare all of the remainder of the bond issue due and payable at call.

Some time ago it was announced that the Kissel company had entered into an arrangement with New Era Motors for the production of front-wheel drive cars under the Ruxton patents. While experimental cars have been seen in Milwaukee and elsewhere near the Kissel plant, deliveries are not yet under way to dealers. Letters from the Kissel company to Kissel owners a short time ago said that the regular line of Kissel six and straight-eight cars would be continued along with the Kissel-Ruxton. The company also manufactures motor trucks, ambulances, funeral cars, etc. It was established in 1906 by George A. Kissel, president, and William L. Kissel, secretary-treasurer, and has been under their personal direction without interruption since that time.

Plans Test Bases

WASHINGTON, Sept. 17—In order to expedite the engineering inspection and flight testing of civil aircraft as to airworthiness and eligibility for Federal license, the Aeronautics Branch of the Department of Commerce plans to establish a number of Engineering Test bases in different sections of the country, Clarence M. Young, Assistant Secretary of Commerce for Aeronautics, announced today.

"The Aeronautics Branch," Mr. Young said, "proposes to establish these test bases at New York, Detroit, Kansas City, Los Angeles, Oakland, Wichita, St. Louis and Cleveland."

N. Y. Marmon Cuts Prices

NEW YORK, Sept. 16—Marmon Automobile Company of New York, Inc., is staging a special sale of new cars to relieve excessive overstocking.

Lansing Men View Reo

LANSING, Sept. 18—Business men of Lansing were given their first glimpse of the new line of Reo passenger cars on Wednesday, Sept. 17, following the weekly luncheon of the Chamber of Commerce. The cars will be shown to the general public in a premier showing soon.

Humber Introduces New Model Range

LONDON, Sept. 9 (*by mail*)—The new range of Humber cars to be introduced tomorrow at a gathering of dealers at the Coventry plant will be fitted with the Stromberg down-draught carburetor, which Humber has been testing for 12 months; it is used in conjunction with an AC fuel pump and is said to have afforded an appreciable increase of power from the 2 engine types, which otherwise are unchanged. Another innovation is the adoption of the AC air intake silencer, recently described in *Automotive Industries*, in series with an AC air cleaner.

All sedans have hinged windows alongside the rear seat; the hinges are at the forward edge and allow the rear edge to be opened slightly with the result that the flow of air past the car affords an extractor effect securing ventilation without draught, it is claimed. Prices are reduced, though not to so great an extent as those applying to certain other British makes.

Pratt & Whitney Celebrates

NEW YORK, Sept. 16—Pratt & Whitney Co. will celebrate the 70th anniversary of its existence on Oct. 1. The celebration will take the form of a reunion of old employees, and open house will be maintained for them at the plant in Hartford. The plant will be open for inspection at one o'clock and former employees are invited to attend this inspection.

In the evening there will be a banquet for all men who have served Pratt & Whitney for more than 20 years. It is expected that over 400 people will be present at this function.

Cartridge Sale Increases

DETROIT, Sept. 17—W.S. Isherwood, sales manager of the AC Spark Plug Co., has announced that sales of the company's oil filter renewal cartridges for the first eight months of this year were greater than in the corresponding period of last year, with dealers in this country and Canada showing a uniform rate of increase.

Waco Reports Loss

NEW YORK, Sept. 17—Waco Aircraft Co. reports loss for 6 months ended June 30 of \$55,612. This compares with profit for the first half of 1929 before federal taxes of \$156,894.

Steel Market Reflects Firmer Price Stand

Concessions Less the Rule as Fourth Quarter Comes

By William Crawford Hirsch

NEW YORK, Sept. 18—Steel market sentiment and developments are perplexingly mixed. Producers of heavy steel products: bars, shapes and plates, unmistakably are taking a firmer stand on prices for fourth-quarter business, their efforts being directed toward doing away with the heretofore prevalent concessions of \$1 @ \$2 per ton and making 1.65 cents, Pittsburgh, more than a merely nominal quotation.

Cold finishers who are among the largest buyers of steel bars offer little resistance, if any, to a firmer market for their raw material, as they usually have to pass concessions on to consumers and would rather have the benefit of uniformity. In the sheet market competition continues so keen that quite a few sellers use predictions of firmer market conditions solely to corral what little business is being placed on a price basis. It may be said, however, that there is less tendency to shade 3.60 cents, Pittsburgh, for full-finished automobile sheets than there was last month.

News developments of the week include plans for further integration to be brought about through the merger of a Middle West blast furnace and steel interest with a large independent in the rolling and finishing field. Announcement is also made of further modernization plans by several Valley mills.

To reconcile contradictory developments like the foregoing with prevailing conditions, one must assume that the steel market is in a period of transition with the immediate present of relatively little importance, but plans for the future all important. Opinion in the industry now has veered around to the almost unanimous belief that the year's final quarter will be devoid of very much in the way of noteworthy changes and that the market must possess itself of patience until the approach of 1931 reveals the first signs of a real change and what form it will take.

Pig Iron—Some melters believe that prices have reached bottom and are negotiating for good-sized tonnages. Automotive foundries in the Middle West have lately been taking a little more iron. There are no changes in quotations to report.

Aluminum—Automotive demand is routine in character. The market generally is quiet.

Copper—Electrolytic copper was offered on Monday at 10½ cents, delivered Connecticut, the lowest price level in 34 years. The leading fabricating interest has cut prices for all copper and brass products, including seamless tube, to conform to the lower price for the metal.

Tin—Straits tin for immediate delivery was offered at the beginning of the week at 29½ cents. The market is quiet.

Lead—Some storage battery manufacturers are beginning to buy October lead. The market is steady and unchanged.

Zinc—Consuming demand is slightly better.

Cadillac Sets Price on New V-12 Line

Range Begins at \$3,795 for Coupe

DETROIT, Sept. 17—L. P. Fisher, president of Cadillac Motor Car Co., released today prices covering the new line of 12-cylinder Cadillacs which will be shown early in October.

The prices f.o.b. Detroit are as follows: Roadster \$3,940, phaeton \$4,045, all-weather phaeton \$4,895, two-passenger coupe \$3,795, two-passenger convertible coupe \$4,045, five-passenger coupe \$3,895, five-passenger town sedan \$3,945, five-passenger sedan \$3,895, seven-passenger sedan \$4,195, seven-passenger imperial \$4,345.

Mr. Fisher yesterday issued a statement setting forth the Cadillac-La Salle manufacturing program and emphasizing that the Cadillac V-8 and La Salle lines will be continued, thus setting to rest any rumors that might be afloat to the contrary.

Ford Adds De Luxe Commercial Model

DETROIT, Sept. 18—Introduction of a new de luxe delivery car has been announced by the Ford Motor Company. This car is similar to the Tudor passenger car, but it is 14½ in. longer. There are panels instead of side windows in the rear compartment. The de luxe delivery is mounted on the Model A chassis.

Standard equipment includes a side wheel carrier and spare wheel, rear-view mirror of the type used on closed cab commercial cars and trucks, rustless steel radiator shell and dome light. The car may be had in any one of several color combinations.

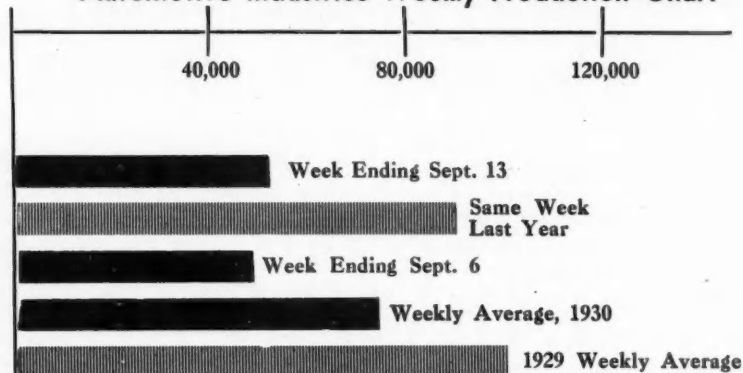
S.A.E. Nominates Marks

NEW YORK, Sept. 18—E. S. Marks, H. H. Franklin Mfg. Co., has been nominated as vice-president of the Society of Automotive Engineers, representing passenger car engineering. John A. C. Warner, now secretary and general manager of the Society, was nominated for the office at the Summer Meeting at French Lick. Mr. Marks' nomination is to fill the vacancy on the ticket automatically created on Mr. Warner's assuming his new duties. Mr. Marks has been a member of the Society of Automotive Engineers since 1922 and is affiliated with the Buffalo Section.

Warner Addresses Phila. Section

PHILADELPHIA, Sept. 18—The Philadelphia Section of the S.A.E. started its season last night with a smoker at the rooms of the Philadelphia Automobile Trade Association at which General Manager John A. C. Warner of the S.A.E. spoke on Executives and Engineers.

Automotive Industries Weekly Production Chart



Sees Decline in African Sales

MONTREAL, Sept. 16—With the passage by the South African Legislature of a bill to alienate the right of automobile dealers to collect payment on the hire purchase agreement, the sale of motor cars in the Union is expected to decline. This was one of the remarks made by C. S. Bissett, Canadian trade commissioner in South Africa, who arrived in Montreal over the week-end aboard the Canadian Pacific liner, Duchess of York. Instalment buying of automobiles in the Union has greatly stimulated the trade. Mr. Bissett pointed out, but the Government is now giving close consideration to this situation in the belief that the economic position of the country is being undermined thereby. Trade between Canada and the Union is still in a healthy condition and South Africans show a disposition to buy from this Dominion. Much rubber goods and automobiles are bought from this country. The projected bill on higher purchases may have a material effect, however, on the importation of certain low-priced cars shipped in large quantities from Montreal to Port Elizabeth.

Mooney Reported in Russia

NEW YORK, Sept. 17—A press dispatch from Moscow received here yesterday states that J. D. Mooney, vice-president of General Motors Corp., in charge of export operations, is now in Russia and implies further that he has undertaken negotiations with a view to securing from the Soviet government a concession for the establishment of a General Motors assembly plant in Russia.

No statement could be secured from G. M. officials as to whether this was correct, although it is known that Mr. Mooney is now in Europe, having sailed from this country a few weeks ago for a business trip.

Perry Succeeds Lees

TROY, OHIO, Sept. 18—The Waco Aircraft Co. announces that its sales manager, Robert F. Lees, has tendered

his resignation, to be effective in about 30 days.

Mr. Lees will be succeeded by Hugh R. Perry, who has been with the Waco organization since Jan. 2 as Mr. Lees' assistant.

Aviation Corp. Reports Loss

NEW YORK, Sept. 17—The Aviation Corp. reports net loss for the six months ended June 30 of \$3,236,317. F. G. Coburn, president of the corporation, said that this loss includes charge-offs on realized losses and provisions for anticipated write-offs.

The corporation continues in a strong financial position. As of September 15, 1930, its cash resources in excess of operating requirements aggregate more than \$19,000,000, or in excess of \$6 per share on stock outstanding.

Soviet Purchases Increase

NEW YORK, Sept. 17—The U. S. S. R. (Russia) purchased from the United States during the first six months of 1930, 16,535 automotive units valued at \$21,705,867, with engines and parts valued at \$24,734,705. This compares with 4448 machines, valued at \$4,306,345, shipped during the first half of 1929.

Pressed Steel Books 2 Orders

NEW YORK, Sept. 17—The Pressed Steel Co. of Great Britain, British affiliate of the Edward G. Budd Mfg. Co., has received and is executing orders for two new-style, all-steel single piece body models for two of the largest quantity production automobile manufacturers in England.

McCord Gets Dividend

NEW YORK, Sept. 18—McCord Radiator & Mfg. Co. has declared regular quarterly dividend of 75 cents on Class A stock, payable Oct. 1 to holders of record Sept. 26.

Willys' Sales Increase

TOLEDO, Sept. 18—Willys-Overland showed a gain in unit sales of 30 per cent in August over July, according to L. A. Miller, president.

N. A. P. A. Elects Martin President

Members Report Increase in Sales

CHICAGO, Sept. 18—At a recent meeting of the National Automotive Parts Association, held here at the Hotel Stevens, W. W. Martin, president of the Superior Motor Parts Co., Pittsburgh, was elected president of the association. Henry Lansdale was elected vice-president and a director, and was subsequently appointed general manager, a recently created office within the association.

Directors elected in addition to the above were:

A. F. Baxter, Unit Parts Corp., Buffalo; C. C. Colyear, Colyear Motor Sales Co., Los Angeles; D. N. Test, Central Motor Parts Co., Indianapolis; Henry Eagle, Chadick-Delamater Co., New York; Frank E. Brittain, General Automotive Parts Co., Oklahoma City; J. E. Aff, Quaker City Motor Parts Co., Philadelphia.

Additional officers elected were: A. F. Baxter, vice-president; J. E. Aff, secretary and treasurer.

Members of the association reported a 14 per cent increase in their business of the first two quarters of this year as compared with business for the corresponding period of last year.

Begin Metal Highway Work

MIDDLETOWN, OHIO, Sept. 18—Work on the new metal base highway connecting two townships in Sangamon County, Illinois, was begun Monday this week, according to officials of the American Rolling Mill Co., which is undertaking the base work. A base and curb structure of sheet iron will be covered with a wearing surface of brick. This method is claimed to be a new departure in highway construction.

Dodge Offers Trophy

NEW YORK, Sept. 18—Horace E. Dodge, president of the Horace E. Dodge Boat and Plane Corp., will offer to the \$15,000 Dodge Memorial Trophy for contestants in the Labor Day Sweepstakes next year at the Detroit Yacht Club. The trophy was established in memory of Mr. Dodge's father, one of the founders of the automobile manufacturing company bearing his name.

Pratt and Lambert Declares

BUFFALO, Sept. 17—Directors of the Pratt and Lambert Co. declared a dividend of \$1 a share on the no par common stock of the company, to be paid Oct. 1 to stockholders of record Sept. 15.

Wheeler Elects Edwards

CLEVELAND, Sept. 18—C. J. Edwards has been elected president of the Wheeler Metal Products Corp., according to an announcement from the company.

Leases Larger Building

NEW YORK, Sept. 19—Wheels, Inc., metropolitan agents for the Motor Wheel Corp., Wire Wheel Corp. of America, Bendix Brake Co., and the Cleveland Welding Co., has leased the building now occupied by the New York Renault agency at 780 Eleventh Ave. The building will provide a considerable increase in floor space, according to the announcement of the change.

Rickenbacker Sees End of Trains

ATLANTIC CITY, N. J., Sept. 17—Addressing the opening session of the twenty-fourth annual convention of the National Petroleum Association at the Hotel Traymore this afternoon, Captain E. V. Rickenbacker, vice-president of the Fokker Aircraft Corporation, predicted that in 1950 there would be 50,000,000 automobiles in the United States; that passenger trains would pass out of use within fifteen years, and that the railroads would use airplanes.

Nachman Elects Stark

CHICAGO, Sept. 17—E. M. Stark was elected a member of the board of directors of the Nachman-Springfield Corp. yesterday at the annual meeting of stockholders. Fred A. Nachman, Louis Suekoff, Aaron Lipper, James T. Hutchins, W. E. Stanley and Charles R. Simmons were reelected. The office of chairman of the board was abolished at the subsequent directors' meeting and Fred Nachman, who had held that position, was elected president to succeed Mr. Suekoff, who was named a vice-president. Mr. Lipper and J. L. McInerney were also named vice-presidents and Charles R. Simmons secretary and treasurer.

Greyhound Omits on One Issue

CHICAGO, Sept. 17—Greyhound Corp. directors yesterday declared the regular quarterly dividend of \$1.75 a share on the Class A stock, but failed to take any action regarding the declaration of the quarterly disbursement of \$2 a share on the participating preference stock. Dividends on the two were inaugurated April 1, 1930.

American Eagle May Issue

CHICAGO, Sept. 17—Stockholders of American Eagle Aircraft Corp. will be asked to vote on a proposal to reduce the present capitalization from 2,000,000 shares no par common stock to 200,000 shares no par common stock, to be effected by the exchange of one share of new common for ten shares of old.

The stockholders will also vote on a resolution to authorize the corporation \$500,000 6½ per cent 15-year sinking fund debenture gold bonds.

Highway Delegates to Inspect Roads

International Group Will Study All Types

WASHINGTON, Sept. 18—Outstanding highway engineers and administrative officials of more than 60 countries are included in a list of 300 official and other delegates to the Sixth International Road Congress to participate in the highway inspection tours sponsored by the Highway Education Boards.

The tours will follow the sessions of the Congress from Oct. 6 to 11. The tours have been arranged to afford the delegates an opportunity to acquire first-hand information on the construction, maintenance and use of all types of modern highways in the United States. Insofar as time permits, agricultural and industrial activity along the routes of the tours will be studied, with particular reference to the relationship to highway transportation.

The invited delegates will be divided into groups of the same size for each tour. The first tour will be devoted to a study of high-type, heavy traffic roads in densely populated industrial areas, including metropolitan area developments. The second will include a thorough study of all types of roads, principally in agricultural areas and in temperate and semi-tropical zones.

Special attention will be given to the utilization of low-cost roads in the semi-tropical part of the country. The third tour will be devoted to all types of roads under varying topographical and climatic conditions, with particular reference to winter conditions of frost and snow and low-cost roads in Northern latitudes.

Drought Period Broken

WASHINGTON, Sept. 18—Improvement in automobile sales in regions affected by the recent prolonged drought period was indicated today as the drought was reported by the Weather Bureau as "substantially relieved or effectively broken" last week over most of the area between the Rocky Mountains and the Appalachians and particularly in states that were previously most dry.

"Some rather extensive areas, however," the report continues, "are still largely unrelieved. These include principally most of Iowa, localities in northern Illinois, parts of Wisconsin, much of Michigan and considerable sections of Ohio, where recent rains continued of a very local character and were insufficient to relieve the drought conditions."

Stephens Joins Gordon Metals

MILWAUKEE, Sept. 16—D. E. Stephens, former commercial sales manager for the Harley-Davidson Motor Co., has joined the Gordon Metals Corp., Milwaukee, as vice-president in charge of sales.

Men of the Industry and What They Are Doing

G.M. of Canada Appoints

Several appointments to various positions in General Motors of Canada, Limited, are announced by H. A. Brown, vice-president and general manager of the company. These appointments are all consequent upon the establishment of the zone system of operation in connection with the management of General Motors, Canadian business. Transfer to this system has been proceeding for several weeks. W. H. James has been appointed assistant treasurer, following the transfer of H. R. Wilbur to the zone control group. Mr. James, who was born in Trenton, Ont., has been with General Motors of Canada, Limited, for almost 12 years. Until August, 1928, he was stationed at Oshawa.

With the opening of the Regina, Sask., plant, however, he went to Regina as comptroller, returning to Oshawa in the spring of 1930. With his new appointment his headquarters will continue to be in Oshawa. E. E. Leavens becomes assistant secretary concurrently with the transfer of G. W. Hezzlewood to other duties on the president's staff.

Mr. Leavens has been connected with the secretary's office since 1922, and came to General Motors of Canada, Ltd., in July, 1920. He is a native of Quebec.

Mr. Brown also announces the appointment of Harry M. Ireland to the post of advertising manager, following the resignation of W. M. Robertson. Mr. Ireland has been connected with the General Motors advertising department for some time in the position of contact man between the central office and the company's advertising agency.

Olds Appoints Hoover

Dane H. Hoover, who has been connected with the Olds Motor Works for three years, has been named personnel director of that company to succeed Arthur Miltner, who has been transferred to Saginaw as factory manager of the Saginaw Gear company, another division of General Motors. Mr. Hoover came here from Anderson, Ind., where he had been connected with the Delco-Remy corporation. Until his recent promotion he has been safety director of the Oldsmobile factories.

Davis Joins Durant

Charles H. Davis, former secretary of the Lansing Chamber of Commerce, is now connected with Durant Motors, Inc. His official title has not been announced. Mr. Davis was largely responsible for bringing Durant to Lansing back in 1920 when he was with the Chamber of Commerce.



Harold W. Roland

who has been appointed manager of truck sales for the Reo Motor Car Co., Lansing, Mich.

Chick Succeeds McNaught

L. P. Fisher, president of the Cadillac Motor Car Co., has announced the appointment of J. C. Chick to succeed Lynn McNaughton, whose resignation was reported a few days ago.

Mr. Chick's official title will be that of general sales manager; H. M. Stephens, formerly general sales manager, having been transferred to the staff of R. H. Grant, vice-president of the General Motors Corp.

Previous to his appointment Mr. Chick was assistant sales manager of the Chevrolet Motor Car Co.

Lansing Honors Bates

Don E. Bates, secretary-treasurer of the Reo Motor Car Co., has been named general chairman of the Community Welfare Fund drive in Lansing for the second successive year.

Cadillac Shifts Two

DETROIT, Sept. 18—W. W. Lewis, assistant general sales manager and director of advertising of the Cadillac Motor Car Co., has been transferred to the staff of the advertising section of the General Motors Corp., according to an announcement from L. P. Fisher, president of Cadillac. Truman F. Campbell, assistant director of advertising of Cadillac, becomes the advertising manager, according to the announcement. Effective Jan. 1, the Campbell Ewald Co. will act as advertising counsel for the Cadillac organization.

Reo Appoints Roland

Harold W. Roland, former general sales manager and member of the board of directors of the Ajax Rubber Company, of Racine, Wis., and of the MacClaren Rubber Company, of Charlotte, N. C., their subsidiary, has been appointed manager of truck sales for the Reo Motor Car Co., according to announcement of Elijah G. Poxson, general sales manager.

After several years on the staffs of Detroit and Chicago newspapers, Mr. Roland became sales promotion manager for the Ajax company. He secured rapid promotion with that company. From manager of sales promotion he was elevated to the position of advertising manager and later to general sales manager of both the Ajax and MacClaren Rubber Companies after their consolidation.

G.M. Names Jackson

J. Brook Jackson has been appointed executive secretary of the general purchasing committee and executive secretary of the works managers' committee of the General Motors Corp. In his post on the former committee he succeeds James Lynah, who resigned recently. Mr. Jackson was general manager of the Jaxon Steel Products division at Jackson, Mich., from early May until some weeks ago when General Motors sold that division to the Kelsey-Hayes Wheel Corp. Previously he was business manager of the General Motors research laboratory and director of the general service staff.

Allis-Chalmers Names Roberts

H. C. Merritt, general manager of the tractor division of the Allis-Chalmers Mfg. Co., has announced the appointment of W. A. Roberts as agricultural sales manager of the company. Mr. Roberts will supervise the sale of all farm units, including tractors and tractor implements. During the past two years Mr. Roberts has been vice-president of I. J. Haug & Sons, Regina, Sask., a large distributor of tractors and implements.

Viriot Gets New Post

Charles A. Viriot has been appointed general manager of Flertex, one of the most important manufacturers of brake lining and clutch facings in France. The company is located at Neuilly.

Jones Sails for Europe

A. A. Jones, manager of manufacturing for the International Harvester Co., Chicago, sailed last Friday for Europe aboard the S. S. Ile de France. He is accompanied by Mrs. Jones.

Financial Structure of Mathis Revealed

Stock Offering to Public is Planned

NEW YORK, Sept. 15—Details of the financial structure of American Mathis, Inc., whose officers were announced last week, have just been revealed. Capital structure will consist of 60,000 shares of Class A stock, of which 30,000 shares are being offered to the public at \$50 a share and 30,000 shares are to be held in the treasury, and 500,000 shares of Class B stock, of which 100,000 shares are to be offered to the public at \$15 a share, 30,000 shares to be issued as a bonus to purchasers of Class A stock, 300,000 shares to be retained by E. E. C. Mathis for the use of his name and use of special tools, drawings and blueprints, selling rights for the United States and contract for the manufacture of the company's requirement, and 70,000 shares to be held in the treasury.

Mr. Mathis and his associates hold an option for a period of 18 months to purchase these 70,000 shares at \$50 a share.

In addition to the directors announced last week, Edouard Cournand, treasurer and vice-president of General Bronze Corp. of New York, is a member of the board of directors.

Syrian Duties Increased

WASHINGTON, Sept. 18—Imports duties on passenger automobiles and parts have been increased by Syria from the old rate of 25 per cent to specific rates varying, according to weight and horsepower which average an equivalent of about 35 per cent, according to a cablegram received from Consul James H. Kelly, Beirut. The increases became effective immediately, with the exception that goods ordered before the date of the decree, Sept. 2, and goods reaching Syrian ports before Oct. 15 or goods in warehouses cleared before Aug. 15 will be admitted at the former rates of duty.

N.A.T. Buys Stout Airlines

CHICAGO, Sept. 13—Stout Air Service, operating passenger lines between Chicago and Detroit, and Detroit and Cleveland, has been purchased by National Air Transport, Lester D. Seymour, vice-president and general manager of the latter organization, has announced.

Shaler Profits Are Steady

CHICAGO, Sept. 13—Sales of the Shaler Co. were about 15 per cent under the same period last year for the first eight months of 1930, but the profits in the 1930 period were approximately equal to those of the 1929 period, P. H. Door, president, has announced.

Wisconsin Registers 4196

MILWAUKEE, Sept. 15—Official new car registration figures issued by the secretary of state of Wisconsin show that 4196 new passenger cars were licensed in August, compared with 8332 in the same month of 1929. Since Jan. 1 registrations were 60,249, against 83,331 in the first eight months of 1929. Commercial car registrations in August numbered 806, against 1144 in August, 1929; for the first eight months, 9706 against 11,212 in 1929.

Low Rubber Prices Increase Trading

NEW YORK, Sept. 15—Increased trading in crude rubber as a result of new low prices is reported by F. R. Henderson Corp. September rubber receded to a low point of 7.8 cents per pound last week. As a result of announcement by the government of the Straits Settlements that it would not interfere in the production of crude rubber, a number of estates have announced their intention of closing down for an indefinite period. It is thought that others will be forced to the same action very soon. On the other hand, many estates will tap to the utmost in order to reduce their production costs so that they can survive. Native production, which has virtually no overhead, will also probably continue unabated, in the opinion of the Henderson company.

Arrivals of crude rubber at all ports of the United States during the first 12 days of September are estimated at 12,625 tons.

Stocks in London have increased to 81,830 tons, and those in Liverpool have increased to 31,159 tons.

Van Sicklen Plans Automobile Radio

CHICAGO, Sept. 15—Van Sicklen Corporation directors have voted an expansion program which will entail production of radio equipment for cars. In accordance with the plan to devote all the resources of the corporation to the new program, the directors voted to omit the dividend on the Class A stock, due Oct. 1.

The automobile radio will be known as Van Sicklen Motoradio. It is a small device, capable of installation in any car and has been in successful operation for a year. The corporation will begin quantity production in its Elgin plant Sept. 20.

American Cirrus Plant Closed

DETROIT, Sept. 15—The engine plant of American Cirrus Engines, Inc., at Marysville, Mich., has been shut down for a 30-day period, to reopen about Oct. 1. It was planned to close the entire plant for this period, but new tool contracts just received will keep that department running full time.

Tire Manufacturers Reduce Inventories

Shipments Exceeded Production in July

NEW YORK, Sept. 15—Tire manufacturers have succeeded in reducing their inventories to the lowest level since Nov. 30, 1928, according to statistics issued by the Rubber Manufacturers Association. As of July 31, there were on hand at the factories 12,599,091 casings, a reduction in inventories of 11 per cent, as compared with June 30 of this year and 21 per cent as of July 31 last year.

Shipments for the month amounted to 5,810,448 casings with production at 4,257,409 casings. Shipments represent an increase of 2.9 per cent over June, 26 per cent below July, 1929, and 26.4 per cent in July, 1928.

Production shows a decrease of 22 per cent under June, 34 per cent in July of last year, and 34.5 per cent under July, 1928.

Figures for manufacturer members of the association, estimated at 75 per cent of the entire industry, for July of this year, as compared with June of this year and July of last year and classified according to types, are as follows:

Pneumatic Casings—All Types

	Inventory	Production	Shipments
July, 1930	3,449,318	3,193,057	4,357,836
June, 1930	10,621,634	4,097,808	4,234,994
July, 1929	12,027,230	4,856,241	5,891,020

Inner Tubes—All Types

July, 1930	9,325,602	3,151,107	4,684,182
June, 1930	10,889,444	3,959,972	4,212,082
July, 1929	12,248,982	4,634,251	6,084,421

Balloon Casings

July, 1930	7,613,558	2,767,213	3,512,764
June, 1930	8,363,087	3,513,719	3,496,791
July, 1929	8,670,534	3,689,616	4,192,894

Balloon Inner Tubes

July, 1930	7,227,472	2,516,356	3,431,376
June, 1930	8,107,920	3,318,464	3,297,573
July, 1929	8,692,058	3,249,014	3,945,727

High Pressure Cord Casings

July, 1930	1,835,760	425,844	845,072
June, 1930	2,258,517	584,089	748,203
July, 1929	3,325,494	1,162,182	1,690,264

High Pressure Inner Tubes

July, 1930	2,088,130	634,751	1,252,806
June, 1930	2,781,524	641,508	914,909
July, 1929	3,540,819	1,382,118	2,135,257

A. O. Smith Plans Addition

MILWAUKEE, Sept. 15—In addition to the \$1,000,000 engineering and research laboratory on which work is well under way, the A. O. Smith Corp. has announced the placing of contracts for the construction of a new shop building, 225 by 242 ft., 100 ft. high, to be known as building No. 108. It will cost about \$400,000, and is to be completed by Jan. 1.

No definite information as to the purposes for which the new shop will be used has been divulged, but it is understood that the Smith Corp. has a number of new developments, not yet ready for public announcement, in addition to its pressed steel automobile frame and electric welded oil and gas line pipe divisions.

Canadian Exports of Motor Vehicles Decline 1 Per Cent in July from June

WASHINGTON, Sept. 16—In July, 1930, Canadian exports of motor vehicles reached a total valuation of \$1,480,928, a decrease of only 1 per cent as compared with June, 1930, but 54 per cent below the shipments in July, 1929, according to information received in the Automotive Division, Department of Commerce. The exports of passenger cars increased 10 per cent in number and 16 per cent in value, but shipments of trucks showed decreases of 26 and 31 per cent respectively.

Production of automobiles in July amounted to 10,188 units, the lowest number reported for any month of 1930 to date. This output was 32 per cent under the June figure and 42 per cent less than in July, 1929. According to the Dominion Bureau of Statistics monthly index number on motor vehicle production, which makes due allowance for seasonal tendencies, and is based on the long term trend 1919 to 1927 inclusive, the Canadian automobile industry, which started 1930 at 40.2 per cent below normal in January, gradually improved its position until a maximum of 4.7 per cent above was attained in May, then dropped sharply in June and again in July to a new low for the year of 48.2 per cent below the normal.

Output of all types of motor vehicles decreased; open cars dropped to 1609 from 1825, closed to 6332 from 9213, trucks to 394 from 797, and chassis to 1833 from 3228.

Cumulative production in the seven-month period declined 41 per cent from the 205,822 units produced during the corresponding period of 1929

and was 20 per cent less than the 150,214 units manufactured in the first seven months of 1928.

The largest increase in the exports of passenger car units was in the classification \$500 to \$1,000, which showed a gain of 25 per cent. The sharpest decline in truck exports was registered in the heavy units, capacity over 1 ton.

The average value of passenger cars and trucks exported in July was respectively \$446 and \$359 as compared with \$423 and \$383 in June.

New Zealand remained the best market for Canadian passenger cars, its takings in July increasing 9 per cent over June, 1930. Although Australia held second position, it was the principal market for low price passenger cars in the classification \$500 or less.

Of the passenger cars exported to New Zealand 387 units were in the classification \$500 or less, 265 valued at \$500 to \$1,000 and 1 over \$1,000. All of the passenger car units exported to Australia, with the exception of 2, were in the low price category.

British South Africa's takings increased 89 per cent and it advanced to third place. Noteworthy gains were made in exports to Argentina, Netherlands, East Indies, British East Africa, Persia and Belgium.

New Zealand and Australia were also the two best markets for Canadian trucks, their takings increasing 18 and 1750 per cent respectively. Shipments to the other leading markets, with the exception of British South Africa and Peru, showed decreases over June, 1930.

Ross Reports Profit

CHICAGO, Sept. 15—Net profit for the Ross Gear and Tool Company for the year ending Dec. 31, 1930, will be around \$415,000, equal to \$2.76 a share on the 150,000 shares of no par stock, as compared with \$565,581, or \$3.77 a share in 1929, it is estimated by Edward A. Ross, president.

For the eight months ended Aug. 31, 1930, the company reports a net profit of approximately \$277,000, equal to \$1.84 on the above capitalization. The net for the six months ended June 30, was \$256,948, equal to \$1.71 a share.

The stock was recently placed on a \$2 annual basis, as compared with \$3 a year formerly, the cut being due to the failure to earn the 75 cent dividend during the current quarter.

Drop Forgers to Meet

PHILADELPHIA, Sept. 15 — The American Drop Forging Institute will hold its fall meeting at Briarcliff Lodge, Briarcliff Manor, N. Y., Oct. 9, 10 and 11. Papers will be presented

on the following subjects: Fuel Oil and Furnaces, by R. C. Hopkins, Volcanic Specialties Company; Stainless Steel, by Earl Smith, Republic Steel Corporation; Economic Effect of Selling at or below Cost, by C. R. Stevenson, New York; Experience with Foremanship Training in the Metal Trades Industry, by A. R. Peirce, Director National Metal Trades Association.

Atlanta Plant Steps Up

ATLANTA, Sept. 15—Effective today, the Atlanta plant of the Ford Motor Co. will increase its production schedule by employing 150 additional men. Twenty-five additional car units a day will be produced under the new schedule, it was said, bringing the plant's total to 135 cars a day.

Graham Deliveries Gain

DETROIT, Sept. 15—During the last week of August, retail deliveries of Graham cars increased 35 per cent over the preceding week, according to an announcement by F. R. Valpey, general sales manager of the Graham-Paige Motors Corp.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

NEW YORK, Sept. 17—Some reports indicate that, although general trade is still far below that a year ago, there has been some improvement of late, mostly in the wholesale lines. However, the improvement has been very slight; and it is freely admitted that ultimate recovery will be an unspectacular and gradual process.

CHAIN STORE SALES

Sales of 40 leading store chains during August were 7.5 per cent below those a year ago. Sales of these same store chains during the first eight months of this year were .53 per cent above those in the corresponding period last year.

CAR LOADINGS

Railway freight loadings for the week ended August 30 totaled 984,504 cars, which marks an increase of 43,955 cars above those in the preceding week, but a decrease of 177,596 cars below those a year ago and a decrease of 132,207 cars below those two years ago.

CROP FORECAST

A forecast of the Department of Agriculture, as of September 1, places the yield of spring wheat at 240,000,000 bushels, as against 223,000,000 bushels a month earlier and a yield of 228,000,000 bushels in 1929. The production of corn is placed at 1,983,000,000 bushels, as against 2,212,000,000 bushels a month earlier and a harvest of 2,614,000,000 bushels in 1929.

CRUDE OIL OUTPUT

Average daily crude oil production for the week ended September 6 amounted to 2,437,500 barrels for the preceding week and 2,956,350 barrels a year ago.

FISHER'S INDEX

Professor Fisher's index of wholesale commodity prices for the week ended September 13 stood at 83.4, as against 83.5 the week before and 83.3 two weeks before.

BANK DEBITS

Bank debits to individual accounts outside of New York City for the week ended September 10 were 27 per cent below those a year ago.

STOCK MARKET

The stock market last week exhibited an upward tendency, with some reaction on Thursday and Friday. The volume of trading was on a somewhat larger scale, and on two days surpassed two million shares. Prices for the week were irregularly changed, with many issues moderately higher. Call money remained at 2½ per cent.

BROKERS' LOANS

Brokers' loans in New York City for the week ended September 10 increased \$33,000,000, bringing the total up to \$3,143,000,000, as against \$6,474,000,000 a year ago.

FEDERAL RESERVE STATEMENT

The consolidated statement of the Federal Reserve banks for the week ended September 10 showed a decrease of \$48,000,000 in holdings of discounted bills, while there was an increase of \$23,000,000 in holdings of bills bought in the open market. Holdings of Government securities have remained unchanged for the last four weeks. The reserve ratio on September 10 was 81.3 per cent, as against 80.8 per cent a week earlier and 81.9 per cent two weeks earlier.

Financial Notes

McQuay-Norris Mfg. Co. has declared regular quarterly dividend of 50 cents and a 1 per cent stock dividend both payable Oct. 1 to holders of record September 20.

Sterling Motor Truck Co. has declared regular quarterly dividend of 50 cents on preferred payable Oct. 1 to holders of record Sept. 20.

Willis-Overland, Inc., has declared regular quarterly dividend of \$1.75 on preferred payable Oct. 1 to holders of record Sept. 22.

Square D. Co. declared regular dividends of 55 cents a share on "A" preferred and 50 cents on class "B" common payable Sept. 30 to stock of record Sept. 20 at a special meeting of the executive committee held Sept. 10.

McAleer Mfg. Co. directors have increased the dividend rate on the common stock by declaring a quarterly payment of 37½ cents a share payable Oct. 1 to stock of record Sept. 20, compared with the 25 cents quarterly rate which had previously been paid on the preferred, all of which was recently converted into common. Conversion of the 18,000 shares of preferred into common on a share for share basis in July brought the company's sold capitalization to 50,000 shares of common stock.

Motor Bankers Corp. has declared regular quarterly dividend of 35 cents payable Oct. 1 to stockholders of record Sept. 20.

Ross Gear & Tool Co. has reduced its quarterly dividend of 50 cents payable Oct. 1 to stockholders of record Sept. 20.

Jordan Motor Car Co. for the three months ended June 30 reports net loss, after charges, of \$182,676, as compared with profit, before Federal taxes, of \$93,630 for the corresponding period last year. For the six months ended June 30 net loss was \$445,371 as compared with profit of \$151,138, before Federal taxes, for the first six months of 1930.

Goodyear Tire & Rubber Co. of California has declared regular quarterly dividend of \$1.75 on preferred payable Oct. 1 to holders of record Sept. 20.

Waukesha Motor Co. has declared regular quarterly dividend of 75 cents payable Oct. 1 to holders of record Sept. 15.

Offers Supercharged Engine

HARTFORD, CONN., Sept. 15—A moderately supercharged Wasp engine rated at 450 hp. at 2100 r.p.m. with a 10:1 blower drive ratio which is claimed to give sea level operation at an altitude of approximately 5000 ft., is now available for airplane manufacturers, according to E. B. Haines, assistant sales manager of the Pratt & Whitney Aircraft Co.

Curtiss Tests Condor Model

NEW YORK, Sept. 12—Curtiss-Wright Corp. recently conducted tests with a Curtiss Condor 18-passenger transport plane which proved, in the opinion of Captain Frank T. Courtney, test pilot, that the plane retains complete maneuverability with one of its engines cut off immediately after the take-off.

Auburn Stocks Lower

AUBURN, IND., Sept. 15—New Auburn and Cord cars in the hands of dealers average 2.25 cars per dealer as of Sept. 1, R. H. Faulkner, vice-president, announced today. This is a decrease over Jan. 1, 1930, when the average per dealer was 3.23 cars.

United States Maintains Position As Chief World Tire Supplier

WASHINGTON, Sept. 15—The United States continued to maintain by a wide margin its position as chief supplier in the world automobile tire trade which declined 12 per cent during the first half of 1930 as compared to the corresponding period of last year, according to the Rubber Division, Department of Commerce.

Shipments from the eight leading exporting countries—United States, Canada, United Kingdom, France, Belgium, Italy, Germany and Japan, totaled 4,459,000 units in comparison with the record exports of 5,052,000 units during the first six months of 1929. This 12 per cent decline is believed by trade leaders to be a reflection of the prevailing world economic depression.

The decline in the export trade of the United States, the world's chief supply nation, was relatively small as compared with that of some other countries, its loss being 14 per cent as against 28 per cent for France, 20 per cent for Belgium, 26 per cent for Japan and 28 per cent for Italy. Canada's loss was also 14 per cent. The United Kingdom and Germany were the only nations registering increases as compared to last year's period, the United Kingdom reporting a gain of 37 per cent and Germany 15 per cent.

Exports from the United States aggregated 1,448,000 units during the first half of the current year in com-

parison with 1,687,000 units for the 1929 period. Canada, in second place, shipped 826,000 units as against 964,000 units during the first half of 1929.

The United Kingdom, which replaced France as third supplying nation, increased its exports from 551,000 units in the first half of 1929 to 756,000 units during the 1930 period, a gain of 37 per cent. The British gain is attributed to the surplus which has been made available for export since the domestic demand has been fully met. Formerly the United Kingdom depended on imports to meet its tire needs but in recent years the British tire industry has shown a rapid expansion.

The increase in Germany's exports is believed by the trade to be primarily due to rehabilitation of its industry during the past few years and to the trade promotion efforts of its manufacturers.

France, in fourth place, showed a decrease in exports from 792,000 units in the first half of last year to 573,000 units for the current year, a decline of 28 per cent.

Total exports by units for the first six months for other countries were as follows: Belgium, 1930, 272,000; 1929, 342,000. Japan, estimate for 1930, based on five months returns, 90,000; 1929, 108,000. Italy, estimate for 1930, based on four months returns, 339,000; 1929, 473,000.

Crude Rubber Consumption Up

NEW YORK, Sept. 15—August consumption of crude rubber in the United States is estimated by The Rubber Manufacturers Association at 30,575 long tons. This is an increase of 4.6 per cent over July, when 29,245 tons were consumed, and compares with consumption of 38,274 long tons in August of last year.

Imports into the United States during the month totaled 34,558 long tons, as compared with 34,048 tons in July, and with 38,292 tons in August of last year.

Stocks in hand and in transit overland as of Aug. 31 are estimated at 158,178 long tons, as compared with 152,001 tons on July 31, and with 90,769 tons as of Aug. 31, 1929.

Crude rubber afloat for the United States as of Aug. 31 is estimated at 61,168 tons, as against 58,326 tons on July 31 and 49,423 long tons on Aug. 31 of last year.

Michelin to Drop U. S. Plant

NEW YORK, Sept. 15—Michelin Tire Co. will cease entirely operation of its American plant in Milltown, N. J., according to announcement made by J. H.

Michelin, vice-president. This plant was closed down on May 1, since which time the company has been gradually disposing of its inventories of tires.

Mr. Michelin stated that competitive conditions made it impossible for the American plant to operate at a satisfactory profit.

May Build Trans-Canada Road

MONTREAL, Sept. 15—A National highway across Canada is declared to be one of the projects which will be advanced by the new government at the approaching session of Parliament, doubtless as a government measure undertaken primarily to supply work to the unemployed. Provincial highways which are linked up already span Canada from coast to coast with the exception of about 600 miles. and it is this gap, or rather this series of separate gaps, which the Federal government would presumably undertake to bridge as a national work.

Australian Duties on Nov. 1

NEW YORK, Sept. 15—Import duties on airplanes and other aircraft shipped into Australia will not be in operation until Nov. 1, 1930, according to advices received from the comptroller-general of customs, Canberra, Australia.

British Austin Sales Increase

Sales for 3 Mos.
Up 29 Per Cent

LONDON, Sept. 3 (*by mail*)—In announcing the range and prices of Austin cars for 1931, Sir Herbert Austin states that production and sales for June, July and August this year show an increase of 29.7 per cent over the same period in 1929; he does not state, however, whether the same or a similar increase applied to the first five months of this year.

The Austin program for 1931 is much the same as for 1930, consisting of the enlarged (four passenger) Seven, the 12 hp. Four and the 16 hp. and 20 hp. Sixes, all with improvements in bodywork and equipment. The Seven sedans (fabric and metal) are now £130 instead of £140. Price reductions of the larger models range from £11 to £40; thus the 16 hp. Six sedans of three types are now £335, as against £375 hitherto.

Ontario Plans New Highways

TORONTO, Sept. 15—A million dollars' worth of new highway work to be undertaken this fall with the idea of relieving unemployment was announced today by the Hon. George S. Henry, Minister of Highways for the province of Ontario. So far this season contracts have been let by the highways department for 230 miles of paving; 105 miles of grading, 12 bridges and a number of culverts, at a cost of \$7,500,000. The new relief work will bring the expenditure up to \$8,500,000.

Colt Back on N. Y. Row

NEW YORK, Sept. 15—William L. Colt, who was Dodge dealer in New York from 1914, when he organized with Harry L. Stratton the Colt-Stratton Co., up until the organization of Colt-Stewart Co. which handled the Chrysler line, has returned to automobile row in New York as Dodge distributor after an absence of about three years.

Globe-Union Holds Up

MILWAUKEE, Sept. 15—The Globe-Union Mfg. Co. reports that the first seven months of 1930 equaled the same period of 1929 in units produced, and production schedules for the remainder of the year will be 20 to 25 per cent ahead of last year. August sales of the battery division ran 15 per cent ahead of last year, and production is being steadily stepped up.

Ex-Cell-O to Use Carboloy

DETROIT, Sept. 17—Ex-Cell-O Aircraft & Tool Corp. has announced a working arrangement with Carboloy Co., manufacturers of cemented tungsten carbide, under which it will produce milling cutters, counter borers, boring bars and similar tools with carboloy cutting faces.

+ + CALENDAR + + OF COMING EVENTS

SHOWS

Lwow, Poland, Sample Fair....September
London, England, Olympia Show...October
Dallas, Southwestern Automobile,
Oct. 11-26
National Roadbuilders' Show and Con-
vention, St. LouisJan. 10-16
International Garage Exposition, Ber-
lin, GermanyMay 9-Aug. 9

CONVENTIONS

Eastern States Exposition, Springfield,
Mass.Sept. 14-20
A. S. M. E. Machine Shop Practice
Meeting, ChicagoSept. 22-24
A. S. M. E. Iron and Steel Division
Meeting, ChicagoSept. 22-26
American Institute of Mining and
Metallurgical Engineers (Metals
Div.), ChicagoSept. 22-26
American Welding Society Meeting,
ChicagoSept. 22-26
Society for Steel Treating Meeting,
ChicagoSept. 22-26
American Gear Manufacturers Association,
Semi-Annual Meeting,
Hotel Clifton, Niagara Falls, Ont.,
CanadaSept. 29-Oct. 1
National Safety Council, Annual Safety
Congress, Pittsburgh.....Sept. 29-Oct. 4
American Institute of Mining and
Metallurgical Engineers (Petro-
roleum Div.), TulsaOct. 2-3
Pennsylvania Automotive Association
Meeting, Reading, Pa.Oct. 6-7
A. S. M. E. Petroleum Division Meet-
ing, Tulsa, Okla.Oct. 6-8
Sixth International Road Congress,
Washington, D. C.Oct. 6-11
Exhibition—American Roadbuilders
Association, Washington, D. C.,
Oct. 6-11
Society of Automotive Engineers, Pro-
duction, Book-Cadillac Hotel, De-
troitOct. 7-8
Annual Show Drawing, National Auto-
mobile Chamber of Commerce,
WashingtonOct. 9
A. S. M. E. General Meeting, French
Lick SpringsOct. 13-15
Society of Industrial Engineers,
Washington, D. C.Oct. 15-17
Society of Automotive Engineers,
Transportation, Pittsburgh.....Oct. 22-24
Motor and Equipment Association,
Convention, ClevelandNov. 10-14
N.S.P.A. Convention, Cleveland, Ohio,
Nov. 17-21
Annual Asphalt Paving Conference,
Memphis, Tenn.Dec. 1-5
First International Aerial Safety Con-
gress, Paris, FranceDec. 10-23
Society of Automotive Engineers,
Annual Dinner, New YorkJan. 8
Society of Automotive Engineers,
Annual Meeting, DetroitJan. 19-23
Society for Steel Treating (National
Western Metal and Machinery
Exposition), San Francisco..Feb. 16-20

SALONS

Chicago, Drake HotelNov. 8-15
New York, Commodore Hotel,
Nov. 30-Dec. 6
Paris, FranceOct. 2-12
Prague, CzechoslovakiaOctober
Paris, France, Salon (Commercial
Vehicles)Nov. 13-23
Brussels, Belgium, SalonDec. 6-17

RACES

France (Grand Prix)Sept. 21

Wausau Plans New Plant

WAUSAU, WIS., Sept. 15—The Wausau Motor Parts Co., 125 West Washington St., manufacturer of piston rings, is planning the erection of a complete new plant on a new site, the first unit to be 80 x 240 ft., and cost about \$75,000. The city council of Wausau is considering the company's request for the donation of the site of three acres. Karl Mathie is president and general manager.

Swedish Sales Hold Up Well

Market Not Affected
By Adverse Conditions

WASHINGTON, Sept. 15—The generally unfavorable economic conditions obtaining in many European countries seem not yet to have appreciably affected the automotive market of Sweden, according to advices received in the Automotive Division, Dept. of Commerce. During the first half of the current year automobile registrations have been only 3 per cent below those for the corresponding period of 1929. The number of passenger cars declined about 9 per cent, but a gain of approximately 6 per cent in trucks contributed to offset the shrinkage in passenger car sales.

Of the total of 99,144 passenger cars registered on Jan. 1, 1930, 90 per cent were American; of the 2511 buses, 60 per cent were American; 35,172 trucks, 80 per cent American; 54,846 motorcycles, 50 per cent American.

Advocates Truck Junking

CHICAGO, Sept. 15—"The motor truck industry should seriously consider junking plans aiming to eliminate from service motor vehicles that are inefficient to the extent of being unsafe," said C. A. Tilt, president of the Diamond T Motor Car Co., in urging manufacturers, dealers and owners of commercial motor vehicles to cooperate in working out an adequate program for junking.

Quebec Traffic Increases

MONTREAL, Sept. 15—The annual provincial traffic census was taken as usual this year during the first week in August and shows an increase of 16½ per cent in the motor traffic on the highways of Quebec, exclusive of the City of Montreal. With the Montreal figures included the census shows that 98,600 motors made use of the provincial highways during the first week of the month, as compared with 47,200 during the same week last year.

Hydrogenation Plant Operating

NEW YORK, Sept. 15—Standard Oil Co. of New Jersey has had in operation for a month the first commercial petroleum hydrogenation plant in the world at its refinery in Bayway, N. J., according to announcement issued recently by the company. So far the operations have been experimental and no products are available for the market.

FWD Business is Better

MILWAUKEE, Sept. 15—The Four Wheel Drive Auto Co., Clintonville, Wis., reports that its business during the first seven months of 1930 increased 27.6 per cent over the like period of 1929. This represents also an advance of 1.4 per cent over the 1930 half-year increase.